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SARCOPTIC MANGE IN THE FOX.

BY PROFESSOR E. F. DE JONG, NEW VETERINARY COLLEGE, EDINBURGH.

I AM indebted to Mr. J. H. Parker, M.R.C.V.S., Faringdon, for the opportunity of being able to describe for the first time to my knowledge, in the English language, sarcoptic mange in the fox. Mr. Parker sent to me a portion of skin from the loins of a fox which was killed with the Old Berkshire Hounds, for my confirmation of his diagnosis, viz., that it was affected with sarcoptic mange.

On microscopical examination I found scores of acari in all stages of development, from a newly-laid egg to an adult belonging to the genus *Sarcoptes scabiei*, and to the variety *Vulpis* (drawings from which are appended). These acari have no characteristics which distinguish them from other members of the genus of which they are only a variety, and differ principally by their dimensions, being slightly smaller than those of varieties *equi*.

Mégnin, in his "Les Parasites et les Maladies Parasitaires," mentions this parasite, and gives the following measurements:—

Female	.. .. ..	·40 m.m. long, ·31 m.m. broad.
Male	.. .. ..	·24 m.m. long, ·18 m.m. broad.
Egg	.. .. ..	·14 m.m. long, ·08 m.m. broad.

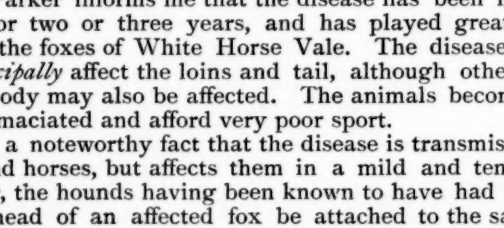
The body is oval in form, and in the *adult* bears four pairs of legs—two anterior, close to the mouth, and two posterior, the latter being invisible when the parasite is viewed from the dorsal surface. They are conical in shape, and short, the two anterior pairs carrying suckers in both male and female. The sexes differ as regards the third and fourth pairs of legs. Both these in the female end in long bristles, whereas in the male the *fourth* pair carries *suckers*. The

immature parasite has only three pairs of legs, and is known as the "hexapod" larva.

ADULT ACARI, FEMALE AND MALE.

Mr. Parker informs me that the disease has been in existence for two or three years, and has played great havoc among the foxes of White Horse Vale. The disease seems to *principally* affect the loins and tail, although other parts of the body may also be affected. The animals become very much emaciated and afford very poor sport.

It is a noteworthy fact that the disease is transmissible to dogs and horses, but affects them in a mild and temporary manner, the hounds having been known to have had it, and if the head of an affected fox be attached to the saddle, a crop of vesicles appear on the horse in a few days, which show no tendency to spread and are easily suppressed.



IMMATURE ACARUS AND OVA.

My best thanks are due to my colleague, Mr. Bradley, for his kindness in drawing the parasites.

CASTRATION OF CRYPTORCHID HORSES WITH A LARGE SEROUS CYST IN THE TESTICLE. SIMPLE AND SUCCESSFUL OPERATION.

BY PROFESSOR DEGIVE, DIRECTOR OF THE STATE VETERINARY SCHOOL AT BRUSSELS.

OWING to the recent progress made in surgical operations, and especially to the judicious adoption of antiseptic precautions, the castration of cryptorchid horses may now be practised with *constant success*. In about five years I have operated on nearly four hundred cases of this kind, and yet have not registered a single death. Of 250 cryptorchid horses sent to the Veterinary School during the last three scholastic years, and which were operated upon by myself or Professor Hendrickx (a few by Professor Liénaux), not one succumbed to the operation. Believing that this fortunate result should be attributed to a ready application of the operative procedure I have followed for a number of years, I propose at an early opportunity to compare it with the methods recommended by Professors Mauri, Trasbot, and Mœller, which appear to afford less security than mine.

In the meantime, I may make mention of a very simple means of performing this operation in a case which, by its nature, would be likely to embarrass an experienced hand—an anomaly characterised by the presence of one or more serous cysts of notable size in the testicle.

In a cryptorchid horse, four years old, I, in June, 1891, removed a testicle as large as a man's head, the organ being the seat of two serous cysts lying against each other.

I have already remarked that, in cases of cryptorchidism, the inguinal space is generally occupied by a rudimentary sheath or canal of a certain size containing the tail and a portion of the body of the epididymis. The testicle being lodged in the abdominal cavity, can only be felt by passing the hand there in the usual manner, by perforation of the peritoneum above the upper inguinal ring. The shape and volume of the mass felt, and its continuity with the spermatic cord, should leave no doubt in the mind of the operator as to its nature. The organ being supposed to be too voluminous to be brought directly out, the operator has to reduce its size by cutting into the serous pouch and removing its contents by the inguinal wound. With this object in view the spermatic cord is drawn outwards, and a piece of twine, which has been previously steeped in an antiseptic solution, is attached to the cord as near to the testicle as

possible. While traction is made on this cord by an assistant, and methodical pressure is carried on by the hand introduced into the rectum, the testicle being firmly applied against the peritoneal rupture, the operator passes the other hand into the wound, and by means of the forefinger nail makes an opening into the part of the cyst opposite the inguinal canal. This part of the operation demands patience, for it generally requires some time for a short nail to scrape through the testicular peritoneum and the fibrous wall of the cyst. Should it happen that the tissues offer too much resistance to the finger-nail, they may be torn through by a small dissecting hook or a sharp-pointed instrument like a trocar, carefully managed.

As soon as the cyst is opened, the fluid at once appears in the inguinal canal and rapidly escapes. When this evacuation is effected the testicle passes out without difficulty, and the operation is completed in the usual manner by division of the spermatic cord and the insertion of a temporary suture in the scrotal wound.

When there is a second cyst, as in the case I have just referred to, the operator must open it by the same procedure.

In the four animals which I castrated in the manner above described, recovery took place almost as regularly as in ordinary cases; and it should always be so if care is taken to adhere to some essential rules, which I will allude to in the article that will appear shortly.—*Annales de Méd. Vétérinaire.*

INOCULATION AS A PREVENTIVE AGAINST SWINE FEVER.

BY J. WILSON BARKER, M.R.C.V.S., ASSISTANT, PATHO-BIOLOGICAL LABORATORY, STATE UNIVERSITY, LINCOLN, NEBRASKA, U.S.A.

FROM the large amount of literature on Swine Plague, Hog Cholera, or Swine Fever, it is easy to see that we are dealing with one and the same disease.

It is an established fact beyond all dispute, and accepted as such by the most practical hog-rearers of this country, and also by the medical students of the disease, that it is *non-recurrent.* This being so, in inoculation we try and imitate nature's method as closely as possible. We cannot find the germ in the non-virulent soil at present and inoculate directly into hogs, or even the mildly virulent one which gives the greatest degree of non-recurrence to protect hogs, so we do the next best thing possible; we use the germ from the least virulent outbreak as close to the earthy home as possible—

that is, we take it from a hog just as soon as he gives evidence that he is infected.

Dr. Billings, in his works on Swine Plague, asserts most emphatically that the disease is an extra-organismal one—that is, the germ grows and multiplies outside the animal body, provided the surrounding conditions are favourable to its growth and development. If the ground infection theory prove to be correct (and I think there is very little doubt that it is), of what use is compulsory slaughter? It is easy to see that the germ can be carried from one place to another, but, fortunately, it does not always find a suitable soil to develop in, and consequently it dies.

Regarding the geographical distribution of the disease, very little has been written upon it; but it appears to be more prevalent in temperate climates and on heavy, damp soils.

A good many authorities object to the use of the word "extra-organismal," or "exogenous," but the objection can easily be overruled when we go back to the possible origin of bacteria. The origin of all bacteria must have taken place external to the animal body, and in the course of time become changed, some ultimately losing their power of multiplying external to the body at all, while others retain the double power of growing and developing in and outside the body under favourable circumstances. Swine fever is, therefore, not a contagious (endogenous) disease, but an exogenous one. In saying that the disease is not contagious, I mean that a diseased hog is not necessary for an outbreak of the disease to take place. Of course, in endogenous diseases a diseased animal is not always required; but in this class of maladies the germs, though retaining a certain power of living outside the body, do not multiply external to it.

The bacillus of Swine Fever is an ovoid, belted germ, belonging to the same class of germs that give rise to Texas Fever, Corn Stalk Disease, and others. It is about one-sixth the diameter of a red blood corpuscle in length, very motile, moving rapidly about the field in a hanging-drop preparation. It stains well with fuchsin, methyl-blue, methyl-violet, gentian-violet, and methylene-green. It grows well in plain neutral bouillon, on agar-agar, in gelatin (without liquefying it), and on cooked potatoes.

The germ is easily found in the blood and organs, particularly the spleen.

Mode of obtaining the germ for inoculation. This is a very important matter, and during the last six years Dr. Billings has given this his most careful attention, with the result that,

if the directions are carried out, no one need fear failure. The first and most important item is to select a live hog that has not been ill over seven days, and is suffering from a mild and natural outbreak of the disease. Never take a sick inoculated hog. Kill the hog by a blow on the head, and let him lie for an hour before making the autopsy. In hot weather it should only lie half that time. Instruments and media being to hand, proceed to make an incision along the sternum and abdomen, removing the skin, and taking great care not to cut the axillary plexus on opening into the intestines. Now with a strong pair of scissors cut through the ribs and lay the thorax open; remove the pericardium, and seize the apex of the heart with a pair of artery forceps. Expose the right ventricle, and with a hot knife sterilise its surface; heat the knife again and make a slash into the cavity. With a sterilised platinum loop proceed to take a drop of blood from the heart, and deposit it in plain bouillon. Three dips into each flask will be quite sufficient. The size of the flask must depend upon the number of pigs to be inoculated, generally those holding 100 c.c. being quite large enough. The germ will grow in the ordinary room temperature, but, if necessary, the growth can be hastened by placing it in the thermostat at 35 degs. C. Occasionally, though rarely, one misses the germ, and then another hog must be had if possible.

Now proceed with the autopsy. Note particularly whether the lesions in the intestines are fresh, and also their extent. If old or extensive, the virus is of no use. Examine carefully the lung lesions, particularly the extent of atelectasis and amount of hæmorrhage. If the lesions are severe or old, discard the virus. Should the hæmorrhage be great, reduce the dose when inoculating. The pathology of the disease has been well written up, both in England and America, so it will be needless for me to attempt to add anything to it.

The virus thus collected ought to be absolutely pure, and to have grown in twenty-four hours. It can now be examined microscopically, to be sure that you have the right germ; when satisfied, the sooner it is used the better. In any case it must be used within seven days.

Before proceeding to administer the doses, it will be well to first give a few *special cautions*, which must be carefully remembered.

1. Never inoculate hogs on premises in which swine-fever has not previously existed.
2. It is absolutely useless to inoculate sick hogs.

3. On no account inoculate either pregnant sows, sows suckling pigs, sucking pigs, or sows that have not been inoculated the previous year, or have recovered from the disease before pigging.
4. Do not inoculate sows and pigs at the same time. Wean the pigs first, unless the sows have been inoculated, or had the disease and recovered.

The inoculation of the hogs is a very simple matter, the virus being hypordermically injected beneath the skin of the thigh, or any other convenient part of the body. In this laboratory are used hypordermic syringes holding 1c.c., and packed with asbestos, so that they can be safely sterilised by heat.

	Doses.
For pigs 3 to 4 weeks old	0·25 c.c.
,, 3 to 5 months old	0·50 c.c.
For old pigs	1 c.c.

Some of the pigs may be ill for a few days after inoculation, but they soon recover. Hogs cannot be considered inoculated until thirty days after the operation, when they should be again inoculated, this time with a double dose.

One objection has been raised against inoculation by some observers in this country, who say that by it the disease is spread. This is not so, as one can see by reading the special cautions given in this paper.

The above short article on inoculation of swine against swine-fever is to place the matter before those interested in this troublesome disease. The success of the operation is beyond dispute, for during the last six years thousands of hogs have been inoculated on the very worst infected farms in the State, with the result that where the directions have been strictly carried out, the losses have been reduced very considerably. Dr. Williams, working under the direction of Dr. Detmers at the experiment station in Indiana, states that he inoculated some 2,000 hogs last year, with the result of a reported loss of only one.

A BACTERIAL DISEASE OF ANIMALS: THE SO-CALLED "CORN STALK" DISEASE.

BY HENRY G. PYLE, D.V.S., CLEVELAND, OHIO, UNITED STATES OF AMERICA.

THE rearing of domesticated animals is one of our principal industries in this prosperous country of ours. Anything materially interfering with the animal industry becomes at once a matter of much importance to us, as veterinarians, as

well as to the entire stock-producing world, and the consumers of meat in all parts of the world in which American-produced meat is consumed. We have to-day, and have had for many years among our herds, a disease ill understood by veterinarians and stockmen. This disease is most commonly known as the "Corn Stalk" disease. This disease naturally, so far as I am aware, only attacks animals consuming the foliage of corn-stalks. It has been specially prevalent in the States of Nebraska, Kansas, and Iowa, though many cases have been reported from other States in the corn-producing sections of our country. The reports of loss from this disease during the winters of 1889 and '90, in Nebraska, were from the following counties: Adams, 700 head of cattle, valued at 15,000 dols., and fifty horses, valued at 5,000 dols. Cass, cattle to the value of 3,500 dols. Franklin, animals valued at 4,000 dols. Howard, 1,500 dols. Karnay, 1,500 dols. Hamilton, 3,600 dols. Paurner, 2,000 dols. Seward, 1,100 dols. Webster, 4,000 dols. Harlem, 1,500 dols. Merrick, 1,000 head of cattle, valued at 18,000 dols. Furicas, no less than 5 per cent. of the cattle were lost. In Adams County 100 head of cattle and 20 horses were placed in a stalk field of 30 acres; in four weeks 63 head of cattle and five horses were dead. These animals were furnished with salt each morning, and allowed a millet stack and four acres of meadow to feed upon. In Kansas, the losses in counties were as follows: Allen, 100 horses and a few cattle. Clay, 500 head of cattle, valued at 7,000 dols., and 25 horses, valued at 800 dols. Cloud, 200 head of cattle. Ellsworth, 2 per cent. of cattle. Geary, 300 head of cattle, valued at 5,000 dols., and 30 head of horses, 1,000 dols. Graham, 3,000 dols. worth of cattle. Kingman, 100 head of cattle. Norton, 3,000 dols. worth of cattle, and 500 dols. worth of horses. Osborne, 4,000 dols. worth of cattle. Phillips, 1,000 head of cattle. Rice, 800 head of cattle. Smith, 500 head of cattle, and 25 head of horses. Rooks, 4,000 dols. worth of cattle, and 800 dols. worth of horses. In Iowa counties: Monroe, cattle 300 dols., and horses 1,200 dols. Shelby, 1,200 head of cattle, valued at 12,000 dols. Two counties in Missouri lost 4,750 dols. worth of cattle. Indiana, Pulaski County, reports loss of 60 head of cattle, valued at 1,200 dols., and 30 horses, valued at 2,200 dols.; small losses from other counties in the same State. Small losses are also reported from many other corn-producing States. I had the unpleasant duty of inspecting a herd thus diseased in Central Illinois last winter, in which there was only a small per cent. of loss suffered.

This disease is usually seen when susceptible animals are first turned into the corn stalk fields, late in the autumn, or in the early winter months, to gather what feed remains in the fields. It has been positively proven that it is not the consumption of the stalks which causes the disease, as many persons claim, by the presence of the wood-like substance in the food interfering with digestion, especially if sufficient water and salt is not furnished the animal during the ingestion of such material; no doubt this substance, as other indigestible material, may cause indigestion, and some symptoms and *post-mortem* appearances common to the so-called "Corn Stalk" disease. Dr. F. S. Billings claims this disease to be due to a vegetable parasite, a belted germ, neither a coccus nor bacillus, but much resembling each in form, which will be more fully described later.

Smutty corn, corn attacked by *Ustilago maidis*, has been claimed by many persons to be the direct cause of this disease. Smut is a vegetable parasite, its fibres penetrate the tissue of a corn stalk, commencing when the stalk is very young, and finally forming the large black masses of spores so easily recognized.

Some few years ago Mr. Gamgee, in three weeks, gave to two cows forty-two pounds of this smut with no ill effect. Smut is found in all corn fields each year, though the "Corn Stalk" disease is found only in certain fields. Mr. Gamgee's and other experiments show that there is no identity between the disease in question and smut.

Another cause frequently claimed to produce "Corn Stalk" disease, is a lack of sufficient salt and water furnished the animal during digestion of food containing much dry, woody, fibrous material, such as dry corn stalks; this idea arising from the appearance of the omasum of the ox, upon *post-mortem* examination, the contents of the stomach being very dry and compact, a condition which may be found upon the examination of this stomach after death from any high febrile disease. It is an erroneous idea that the disease is simply an indigestion. Another fact is, that the contents of the omasum does not always present this dry compact condition so much spoken of. Water is often found in the rumen, upon *post-mortem* examination, even if the contents of the omasum are found to be dry and hard in the "Corn Stalk" disease; thus showing it to be not due to an insufficient amount of water. The salt theory is unworthy of comment at length; but I must say that animals have died from the "Corn Stalk" disease when salt was furnished them each morning regularly.

Animals have also died from "Corn Stalk" disease in fields through which streams of water ran constantly. At times this disease has been known as Murrain, but as the term Murrain denotes no special malady it will not be further considered. The cause of "Corn Stalk" disease is the presence in the animal system of a specific micro-organism, first discovered and described as the cause of the "Corn Stalk" disease by Dr. F. S. Billings, of Nebraska, in 1888. In 1889, Dr. Thomas J. Burrill, of Campaign, Ill., described "a bacterial disease of corn," since which time Dr. Billings has claimed this bacteria described by Dr. Burrill to be identical with his germ of the "Corn Stalk" disease. Comparing the two germs in cultivation, I doubt their identity, though I recognize their great similarity in developing. On slides they present no marked difference, to me, in appearance.

The "Corn Stalk" is a non-contagious septicæmic disease. The micro-organism, called by Dr. Billings a bacillus, most resembles a bacillus, which apparently does not find its primary origin in a diseased animal, nor in material from such an animal, but produces an exogenous, infectious disease. The Billings germ is an oval, belted one, apparently a non-spore bearer, varying much in form and dimensions under various conditions. These germs reproduce only by subdivisions, so far as is at present known. Their growth is very rapid in and upon many artificial cultivating substances, both fluid and solid. The growth will take place at the ordinary laboratory temperature, but it is more rapid if maintained at blood heat. Upon neutralized, sterilized potatoes (cut surfaces), the germs thus grown produce a growth of light, greyish-white coloured material, slightly elevated, with uneven edges.

Upon the whites of hard-boiled eggs inoculated with these germs, there is a growth of clear, light, yellowish-coloured colonies, the edges of which rise higher than the centre of the growth. Upon plain ager-ager standing tubes, the growth of these germs is pearly white in colour; the growth being principally upon the surface of the medium, does not liquefy it. In and upon beef infusion gelatine needle-point cultures, these germs upon the surface form a firm, thin growth, which spreads very slowly; the growth is pearly grey in colour, the medium remaining firm. Upon gelatine plates they grow in colonies, more round and some irregular in shape; the growth is partly beneath the surface, of a grey colour, the medium remaining solid. The growth of this germ in neutral beef-infusion is very rapid, causing the contents of the flask

to become clouded, but lighter in colour. A micro-germ forms on the suface, and a white precipitate is deposited. The ends of these germs are rounded; the length is about ·00125 mm., and their breadth is about ·0007 mm., when measured in blood-stained mounts. The middle portion of the body of a mature germ presents a semi-transparent appearance, bounded by two ends of darker tint. In the hanging drop of fluid from the beef-infusion culture, the germs can be seen in rapid motion; they turn end for end a few times, then change their movements to a peculiar locomotion by raising and lowering themselves in the fluid. During their development they vary much in form and dimensions; when first separated from the mature form they most resemble a coccus in shape, but gradually, though rapidly, change to the mature form. At times two or three mature germs may be linked together, appearing as a chain, but the marks of separation can be plainly seen. These germs stain readily with Ziehl's solution (Fuchsin), or aniline-blue.

Experiments—Dr. Billings has made many successful experiments in connection with this disease. He has succeeded in causing death in susceptible animals by feeding corn-stalk leaves and tops of corn supposed to be diseased with the "bacterial disease of corn," which Dr. Burrill has so completely described. From animals thus destroyed, Dr. Billings obtained pure cultures of the "Corn Stalk" disease. With these cultures he destroyed susceptible animals by inoculation; these presented lesions of the "Corn Stalk" disease, from which animals he again obtained pure cultures.

No. 1. Upon Jan. 27, 1892, at 3.30 p.m., I inoculated one six-months' old Jersey bull calf with pure culture from a case of "Corn Stalk" disease, in beef-infusion. The injection was intravenous (jugular vein), of 9 c.c. of fourteenth generation of the germ. At the same time one white rabbit, female (previously inoculated with other germs without any result), was inoculated with one-third c.c. of the same cultures as the above animal. The rabbit died on Jan. 29, 1892, at 5 o'clock p.m.; the autopsy was held immediately after death; the usual lesions of "Corn Stalk" disease in animals thus killed was found, from which animal pure cultures of the germs of "Corn Stalk" disease were obtained. At the time of inoculation of the calf his temperature was 39·25 c. (rectal). This calf was found dead Jan. 29, 1892, a.m.; soon after death the autopsy was held, at 10 o'clock a.m. same day. No external markings, except a non-suppurating wound at the place of inoculation, which presented the appearance of a healthy wound, the

edges of which were held together by granulations. The lymphatic glands were swollen, clouded and of an increased redness in colour; the small intestines serosa was swollen and of a reddish slate colour; vessels injected, some spots of increased redness; large intestines, darker than normal, with congested spots present; lungs slightly congested throughout each lobe; spleen normal; heart had an ante-mortem clot; blood darker than normal, having but little tendency to coagulate; bladder and contents normal; liver slightly swollen, the cut surface presenting an increase of fat corpuscles; acini distended; hæmorrhagic spots were seen throughout the capsule; gall bladder distended; kidneys slightly swollen, capsule not adhering, cortex of increased redness, engorgement of straight vessels, medullar substance of increased redness, mesenteric vessels engorged. The rumen presented a normal condition; the reticulam mucosa was slightly congested; the omasum in normal condition; abomasum mucosa inflamed and gathered into an increased number of folds; rectum mucosa slightly darker than normal in colour. In the same pen with calf No. 1 was confined a Jersey calf of the same age, throughout the experiment receiving the same treatment as calf No. 1, except the inoculation. This calf presented no symptoms of ill-health. In the blood of calf No. 1 was found the germs of the "Corn Stalk" disease in great abundance. On Jan. 29 the lungs, liver and spleen of calf No. 1 were fed to two hogs in one pen; all the organs were placed in the pen at one time. The two hogs were a lot of six bought at the same place at the same time; they were common ones, and one was half-grown. On the morning of Feb. 3, one of the two hogs was found dead, having died during the previous night; autopsy 11 a.m. same day. No external markings, no effusion in abdominal or thoracic cavities; lymphatic glands somewhat swollen and clouded; small intestines serosa swollen and clouded, vessels injected, generally of a lead and gray colour, interspersed with patches of diffused redness; large intestines serosa same as small, convolutious filled with a reddish-yellow coagulated material, closely attached to underlying tissues.

Organs of thoracic cavity normal; spleen somewhat swollen, dense, and cut surface clouded and somewhat dry. Liver intensely swollen at base, edges rounded, general surface of a brownish, gray-red colour; acini distended. The brownish, gray-red colour spoken of, generally interrupted by acini of same, of a yellowish colour, cut surface corresponding thereto, dry and anæmic; kidneys slightly swollen, capsule

not adhering; cortex anæmic, yellowish-gray-red in colour, with engorgement of straight vessels; medullary surface bright red in colour.

Stomach: mucosa excessively swollen and gathered into deep rugæ; the base of fundus mucosa entirely engorged, of bright red colour, and covered with a yellowish-gray corrugated coating, loosely attached; mucosa of pelvic portion intensely swollen, with a viscid coating of a yellowish-leaden colour. Mucosa of duodenum and jejunum swollen, of a general yellowish-gray-leaden colour, interrupted by diffuse patches of redness. Mucosa of ilium still more swollen, and of a slightly dark red colour. Peyers patches swollen; large intestines mucosa swollen; transverse folds of a dirty yellowish-leaden-gray colour, interrupted by patches of a reddish colour. The surface of the entire mucosa was covered with a more or less closely attached dirty yellowish-gray material, which presented a diffused granular appearance; at the closely attached places; the removal of this granular membrane exposed an ulcerated surface. Mucosa of rectum swollen, and of a dirty yellowish-gray colour. Contents of stomach and bowels semi-fluid. This hog blood was used to inoculate three ager-ager tubes, from which pure cultures of the germs of "Corn Stalk" disease were obtained in the unusual form and number as found in the blood of bovines that had died from this disease. From these ager-ager tubes plain gelatine tubes were inoculated, and the same germs were obtained in their usual form. From the same hog blood two beef infusion flasks were inoculated; in these the germs in pure form were present. The hog in the pen with the one that died, and fed in the same, soon afterwards presented symptoms of ill-health, and remained ill for more than two weeks, during which time it lost flesh and had little appetite, but recovered, perhaps not having received so much of the diseased and disease-producing meat; the attack of the disease was not so severe as in the one which died. The remainder of the six hogs continued in good health throughout this time. On January 31st, a small amount of the same virus as calf No. 1 was inoculated with, was placed in 1,000 grammes of beef-infusion, which produced the usual changes in the contents of the flasks. On February 22nd, the contents of these flasks were fed (taken with great relish without any loss of the fluid) to one six months' old calf (which had previously been inoculated with another disease with no ill effect) at the time of feeding. The temperature of this calf was normal, but it soon became elevated and remained so for a number of

days, during which time the calf was stupid, appetite decreased, and in an unhealthy condition; in three weeks it regained its normal condition.

Symptoms of the "Corn Stalk" Disease in Cattle.

Death may occur before you know the animal is ill, or it may remain ill for a number of days, then recover from the illness. The animals are often found prostrate, tympanitic, with increased respiration, and semi-comatose; in this condition they usually die in a short time. They always appear to be in much pain, and have an unsteady locomotion. When prostrate they arise with great difficulty, if able to do so. Constipation is usually present. The other symptoms are those usually found in febrile diseases. The symptoms may much vary in different animals affected in the same herd. The treatment, so far, has been followed with little success, though benefit may be obtained by use of saline febrifuges if given early. Prevention is the best treatment; the herd should be removed from the infected field as soon as an animal is found ailing, to uninfected quarters, and each member of the herd should have a dose of Epsom salts or other saline.

Among the large number of beef cattle exported to Europe from this country during the past few months, there were found upon examination at the abattoirs lesions, especially in the lungs, which led European veterinarians to consider a strange disease. After a few experiments and investigations, Prof. Nocard, of France, at once suspected it to be the "Corn Stalk" disease, and announced his opinion. The English veterinarians, in whose hands animals or portions of organs of ailing animals chanced to fall, soon caused much commotion by some of them announcing the disease to be contagious pleuro-pneumonia; others pronounced it to be some less malignant ailment. Our foreign friends need have no fear of having contagious pleuro-pneumonia introduced into their herds from our beef or other cattle, as this much-dreaded disease is unknown in our beef-producing sections. And as to the "Corn Stalk" disease, no fear should exist, as it is only local and non-contagious. The animals which usually die are the two-year olds in best condition. What animals are susceptible to this disease are to be ascertained. No mention, so far as I know, has before been made with regard to swine being susceptible to it.

My many thanks are especially due to Dr. F. S. Billings, Director of the Patho-Biological Laboratory of the State University of Nebraska, as well as to Dr. Thomas J. Burrill,

Horticulturist and Botanist of the University of Illinois for assistance, material and conveniences afforded me in gaining information for this paper.

TUBERCULOSIS IN THE DOG, COMPLICATED WITH ASCITES.

BY E. WALLIS HOARE, F.R.C.V.S., CORK.

THE subject was a thoroughbred bull dog, about two years old.

He was first brought to me on July 20th, 1892, suffering from lameness of the right hind leg, said to have been occasioned by injuries received in having been recently rolled over by a car. The symptoms pointed to the hip joint as the seat of injury, and treatment was accordingly adopted, with the result that he gradually improved.

At this time the animal was not in a healthy-looking condition, though the appetite was fairly good. This was attributed to the injury to the limb, as he had always been a healthy dog.

Shortly after this the animal was sent to the country, where he did not receive the attention necessary, and from the history given he now commenced to pine away and the abdomen gradually began to enlarge.

On September 21st, he was brought to my infirmary in a miserable condition.

The abdomen was enormously enlarged and the remainder of the body like a skeleton. The visible mucous membranes were pallid, pulse weak and irregular, and respiration laboured. There was total loss of appetite, also obstinate constipation.

The abdominal walls were so distended that it was almost impossible to diagnose the presence of fluid, or to give an opinion as to the condition of the liver.

Paracentesis abdominis was had recourse to, and a very large amount of fluid removed; this gave great relief, which was, however, only temporary. On examination, the liver could be felt very much enlarged; there was no pain or tenderness on pressure, and no jaundice was present, nor yet vomiting.

Small and repeated doses of stimulants were administered, and the abdominal walls were supported by a bandage, and occasional doses of tinct. digitalis and spts. æth. nit. prescribed.

The bowels were acted upon by enemas, but the appetite was entirely lost and the animal remained in a listless condition, being supported only by the administration of fluid

nourishment until September 24th, when he gradually sank and died without a struggle.

There was no pain evinced at any time, and no irritability of the stomach, such as is so often seen in hepatic affections.

At the autopsy, the liver was found enormously enlarged, and almost a mass of white growths, which in some parts had broken down into cavities.

The peritoneum was also covered with small growths, while a few were found on the spleen.

The lungs, with the exception of a few very small growths at the lower borders, were healthy, as also were the pleuræ.

The specimens were kindly examined by Professor McFadyean, who pronounced the lesions to be tuberculous.

The above case presents some points of interest. First, the youth of the patient and the peculiar development of the symptoms. Next, the comparative immunity of the lungs from the tuberculous lesions, also the absence of symptoms during life which would lead to a correct diagnosis. Although the liver seemed entirely unable to perform its functions, from the appearance of its structure, still there was no appearance of jaundice; and other symptoms of hepatic disease, with the exception of ascites and enlargement of the organ, were absent.

Of course, a correct diagnosis in such cases is, from a practical point of view, unimportant; still it is interesting to note that in the case of other lesions of the liver, *e.g.*, carcinomata and sarcomata, we have usually, in addition to the symptoms just described, great pain evinced, and also obstinate vomiting, while jaundice may or may not be present.

A NEW NASAL IRRIGATOR.

BY HENRY GRAY, M.R.C.V.S., KENSINGTON, LONDON.

I BEG to submit to the notice of the profession a new Nasal Irrigator, which Messrs. Arnold & Son, London, made for me last summer, and which I have since employed with very good results.

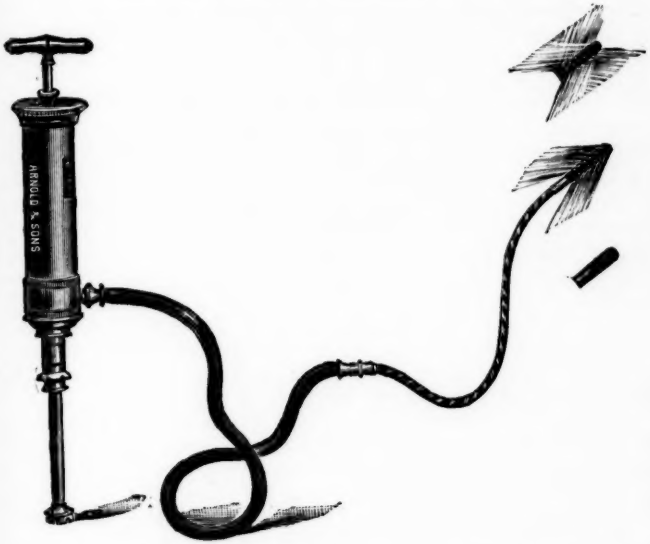
It consists of a tube of the calibre and length of an ordinary gum elastic mare catheter, at one end of which is a screw piece to which a Winton Enema Syringe can be fitted; at the other or free end is another screw-piece to which can be attached, as required, one of three different nose-pieces which are supplied with the instrument.

These nose-pieces are:

(1st) A tube of vulcanite, about 1½ in. long, having four longitudinal rows of holes directed backward so as to form, when in use, a reversed current irrigator.

(2nd) Another tube of similar size and composition to the preceding, but the rows and holes are alternately directed backward and forward.

(3rd) The eye-piece of an ordinary equine catheter, which, when screwed on to the end of the tube, forms a



female catheter. The instrument is passed up the nasal channel of the standing animal until it reaches the part that requires to be irrigated, or even into the posterior nasal opening or pharynx. Then, by means of the Winton Enema Syringe, the medicated solution can be slowly played upon the part or parts that require treatment.

An injection of 1 part of Liq. Creolin to 1000 or 500 parts of tepid water, applied at intervals of about three days, by means of this instrument and Winton's Syringe combined, has, in my practice, rapidly cured, without internal treatment,

cases of chronic nasal catarrh, or the so-called nasal gleet, with or without submaxillary enlargements, after ordinary methods of local and constitutional treatment have failed to produce any satisfactory result. By using this instrument, the old-fashioned effective, but sometimes dangerous practice of pouring solutions down the nostrils by raising or elevating the head or muzzle of the patient has been rendered unnecessary.

The instrument can also be used as a catheter, and as a vesical, vaginal and uterine douche for the mare and cow, and as a stomach pump and douche for large dogs. It may also be employed as an irrigator in the case of large wounds or cavities.

ANEURISM OF THE AORTA IN A HORSE.

BY G. L. PRIEST, MANCHESTER.

IN July last a case of the above disease came into my hands, the subject being a fine bay cart-horse, 17½ hands high and 7 years old. He was bought by a very inexperienced friend of mine from a gang of sharpers. On the arrival of the horse at our place, I pointed out to my friend that there was every appearance of paralysis. On examination I found excessive coldness over the lumbar region, and partial loss of power in the hind quarters; and as there was no appearance of external injury, I decided that no treatment was available, pending a law suit. He stood in a loose box for three months, becoming gradually worse. One morning he was discovered ill with colic, and he died at midday. On *post-mortem* examination I discovered the cause of death—an extensive rupture of the colon. On seeking for the cause of paralysis, I found an enlargement of the posterior aorta (aneurism), just behind the upper portion of the diaphragm, not pendant, but passing upward into the lower curvature of the dorsal vertebræ. Behind the enlargement the aorta was normal to the end, where it divides into its large branches. This case may interest the readers of the VETERINARY JOURNAL.

REMARKABLE MONSTROSITY IN A CALF.

BY E. WALLIS HOARE, F.R.C.V.S., CORK.

A SHORT time since recording the case of monstrosity in a calf for the January number of the VETERINARY JOURNAL, I have met with another remarkable instance of abnormality, consisting of a calf with distinct resemblance to a bull-dog in many respects.

I was called to attend a small half-bred cow on the morning of December 5th, with the history that she had been sick since the evening before, but had not shown any signs of labour pains, etc., and was due to calve in about a month.

On arrival I found a long tongue protruding from the vulva, and in exploring found a very large head in the passage, but no sign of the fore legs; the fœtus was dead. On further examination I detected two very short legs resembling those of a dog, but having feet similar to the bovine species.

After a good deal of trouble, delivery was effected.

The head was very large, and similar in shape to that of a bull-dog. The lower jaw extended beyond the upper, giving an appearance similar to that of the latter animal. The tongue was like that of a member of the canine species. Both fore and hind limbs were very short, and the abdominal cavity was of enormous capacity in proportion; so that the limbs were not sufficient to raise it from the ground. Both ears and tail were similar to those of the canine species.

INFLUENZA, OR "LA GRIPPE," IN THE HORSE.

BY PROFESSOR M. E. LECLAINCHE, TOULOUSE VETERINARY SCHOOL.

(Continued from Page 87.)

ETIOLOGY AND PATHOGENESIS.—Always very contagious, the "grippe," nevertheless, possesses much less diffusable properties than typoid fever, or even infectious pleuro-pneumonia. When it enters a stable it will inevitably attack nearly all the horses in it, but the neighbouring stables may be absolutely free from it for a long time. Dieckerhoff appears to me to have happily pourtrayed the kind of contagion which it assumes. "The typhoid fever is a disease of the country in which it prevails, infectious pleuro-pneumonia is an affection of the locality, and the 'grippe' is a stable malady."

The disease attacks animals of all ages indifferently; opinions are unanimously agreed upon this point, and the greater resistance of aged horses in certain places which have been frequently invaded, is explained by the greater chance of an anterior contamination. It has been demonstrated, in fact, that one attack assures an enduring and almost absolute immunity. With regard to typhoid fever, on the contrary, its evolution does not in any way diminish the receptivity to another infection; for I have collected numerous facts

reported by other observers in proof of this. The influence of anterior evolution of infectious pleuro-pneumonia is not so well established; the information obtained from horse-owners with respect to this point is very insufficient, and it is only veterinary surgeons, civil and military, who can furnish precise knowledge with regard to it. Rosenfeld has seen the "grippe" spare all the troop horses which had been affected with pleuro-pneumonia the preceding year; but he is inclined to believe, from the indications he had, that the disease thus designated was in reality an enzooty of unrecognised "grippe."

Very few animals possess natural immunity against the disease, which attacks the *quasi* totality of those exposed to contagion, and the variations in individual reciptivity are betrayed only by the more or less grave form of evolution.

The modes of transmission of the malady and the nature of the contagium are entirely undetermined, but the progress of the contagion is very interesting. When the disease enters a stable, the animals are successively attacked, several days sometimes elapsing between two consecutive cases; in one locality its diffusion sometimes occurs with the same slowness from stable to stable; and the affection may thus linger in a centre for three or six months on an average.

The duration of the period of incubation is not well ascertained, but, according to the various estimates given, it may vary between two and ten days. It is evident that the maximum period cannot be exactly fixed, the penetration of the contagium being only effected a certain time after exposure to contagion.

TREATMENT.—This comprises, at the same time, medical intervention and the application of prophylactic measures.

(*a.*) Medical treatment is directed exclusively against the dominant symptoms. The anæmia and general depression are combated by diffusible stimulants given in electuaries—wine, alcohol, oil of turpentine, etc.; and dry or slightly irritating frictions—alcohol, oil of turpentine, etc. Common salt, associated with powdered gentian (100 grammes), or oak-bark (50 to 60 grammes), and drinks of tea or milk (Dieckerhoff, Huidekoper), have been recommended. Against the hyperthermia, salicylic acid and quinine have been prescribed.

Intra-tracheal injections are recommended against the persistent inflammations of the larynx and trachea. Dieckerhoff employs solutions of one per cent. acetate of alumina, a half per cent. alum and a half per cent. bromide of

potassium; while Jelkmann* prescribes the following preparation:—

Hydrochlorate of morphia	.. ..	2 grammes.
Water of bitter almonds ..	.. ..	200 „

Ten grammes of this are injected morning and evening.

Against spasms of the larynx, Huidekoper prescribes inhalations of oil of turpentine, and drinks containing camphor and belladonna.

The treatment of thoracic complications does not demand any special indication.

(*b.*) As soon as the "grippe" appears in a stable, it is theoretically indicated to evacuate the infected stalls and isolate the sick animals. But experience demonstrates that, even in the case of rapid intervention, the contagion can rarely be checked. Many German military veterinary surgeons are opposed to moving effective horses out of the invaded stables, as this only prolongs the stay of the disease; and Zorn advises promoting the contagion by placing healthy animals among the sick, in order that all may speedily be affected and the disorder all the sooner got rid of. Such a system may be advisable so far as army horses are concerned, but it is evident that it cannot be universally applied. In the stables of civilians and agriculturists the indications are altogether different, and it is preferable to check the progress of the enzooty in order to have always a portion of the animals fit for service.

Hygiene has the greatest influence on the evolution of the disease. It is essential that, as soon as the "grippe" is recognised, the stables are evacuated, and the horses placed in the open air or in some provisional shelter, according to the season. This intervention is the most efficacious of all measures; and it is generally accepted as such. Work should be completely interdicted, even in very slight cases, and only daily promenades allowed.

It is difficult to terminate this study without raising the question as to the nature of the malady. Different, in a clinical point of view, from all the known contagions, should the "grippe" be considered as a proper affection, or does it only constitute a bastard form of, or deviation from, another actually differentiated type?

A first synthetical tentative has been made which appears to me to be particularly unfortunate. We cannot dream of

* *Laryngo-Pharyngitis der Pferde und deren Heilung durch Einspritzung von Blausäure.* Zeitschrift für Veterinärkunde, 1889, p. 375.

allying the "grippe" with the *idiopathic anæmia* which has been seen in the east of France; it is sufficient to peruse the descriptions given by Lignée, Charlier, and Anginiard to be convinced of this. While the "grippe" is a benignant malady and of sudden invasion, the anæmia commences gradually, and increases in intensity until death occurs. With regard to the pretention announced by Fröhner to assimilate the "grippe" with *pernicious anæmia*, of which he and Zschokke had observed *some cases*, we cannot take it seriously. If the assimilation was ever justifiable, which is scarcely probable, it might be simply concluded that the four or five cases of anæmia reported were only those of unrecognised "grippe."

The relations that may exist between the "grippe" and infectious pleuro-pneumonia merits a more complete examination. The relationship is at least justified, from the fact that there are frequently observed in remount depôts cases of aborted pneumonia similar to the "grippe" (Joly), and Delamotte has seen an enzooty of bronchitis precede the appearance of infectious pneumonia.*

It would seem that a first point might be easily established by observation: does not one attack of the "grippe" protect animals from the pleuro-pneumonia, and, reciprocally, does the latter confer immunity against the former? By the answer to this query valuable indications will be gained for the solution of the question of identity, on the condition, however, that cases of "aborted pneumonia" (the *ephemeral pneumonia* of Dieckerhoff), which have only an illusory resemblance to the "grippe," will not be reckoned. Military veterinary surgeons are placed in very favourable conditions to obtain precise information in this respect.†

If we can only venture on the study of the "grippe," in its relation to similar diseases of the horse, with extreme reserve, we ought to be still more reserved with regard to the appreciation of suspected analogies between it and some contagions affecting different species. The disease has been likened, for instance, to a bovine malady known in Germany by the name of *benign contagious catarrh*, and which has been observed in the enzootic state in Bavaria during the year 1890.‡

* *Analyse d'un travail de Joly.* Répertoire de Police Sanitaire, 1890, p. 518.

† German military veterinary surgeons do not believe in an analogy between the two maladies, which they have seen developed separately. Rust also invokes, as an element in differentiation, the constant absence of Schütz's bacterium in the nasal discharge of the "grippe."

‡ Die Krankheiten der Wiederkäuer, 1892, Lieferung I., p. 86. Goring, *Seuchenafter Catarrh beim Rindvieh.* Wochenschrift für Thierheilkunde, 1891, p. 461.

Its assimilation with human "grippe" has often been attempted, and since the beginning of this century this notion has been formulated on several occasions. Raised anew in these later days, the question has been minutely studied in the report of the Prussian Military Service of Health for 1889-90, in which the conclusion is arrived at that there is no relationship between the two affections. This is also the opinion formed by one of the highest authorities in comparative pathology, Bollinger.*

In *résumé*:

1. In the horse there is a contagious malady different in its clinical characters from typhoid fever and infectious pleuro-pneumonia, and habitually confounded with "influenza affections" or "typhoid affections."
2. We may restore the name "grippe" to this disease, by which name it was designated in times past.
3. The "grippe" is sufficiently characterised, from a clinical point of view, by its enzootic character, and by the signs of a diffused catarrhal inflammation of the air-passages.
4. It *probably* constitutes an affection peculiar to the horse, and due to a special contagium.

* *Ueber den Zusammenhang der Influenza des Menschen mit derjenigen der Pferde.* Deutsche Zeitschrift für Thiermedicin, Band xvii., 1891, p. 241.

Editorial.

THE EXTINCTION OF CONTAGIOUS DISEASES.

THE success which has attended the conflict with some of the contagious diseases of animals in this country, should afford encouragement to continue the good work until all of these communicable and harassing maladies are extinguished in the United Kingdom. The Cattle Plague, the Contagious Pleuro-pneumonia of Cattle, Foot-and-Mouth disease, Sheep-pox, and Glanders in the Army, have been vanquished; and though this has been accomplished by unscientific and apparently rude, barbarous, and very costly means, yet they have proved successful, and have afforded relief to a considerable extent to what was, until a few years ago, a somewhat severely afflicted country. But the work is not yet finished, for there are still serious disorders of this kind which are either active and gravely damaging, or are lying in a semi-dormant state, waiting to be roused into vigorous aggression when favourable circumstances permit. We may instance the very infectious disease of pigs known as Swine Fever and bovine Tuberculosis, as well as Glanders, while among the half-subdued scourges Rabies, perhaps, holds the foremost place. Other maladies there are which are likewise amenable to repressive measures, but which have, like Tuberculosis, Swine Fever, Glanders and Hydrophobia, not yet been seriously considered, and yet can doubtless be effectually dealt with; these are Anthrax, Symptomatic Anthrax, Contagious Foot-rot of Sheep, and several parasitic diseases. No doubt in time these will be taken in hand, and if the proper measures are adopted, they also will disappear. But the question arises, Can this country be kept free from the introduction of such plagues from abroad? It is somewhat extraordinary, and indeed inexplicable, that other European countries—all of which have State-supported Veterinary Schools in which veterinary instruction is much in advance of our own, and veterinary science is cultivated to a degree we scarcely dream of attaining—should be so severely and constantly visited by maladies that are now unknown to us. It is evident that until they free themselves from them, we can never consider ourselves safe, even with the most rigid system of portal inspection, and the slaughter of flesh-producing animals at the places of debarkation. The introduction of the

last outbreak of Foot-and-Mouth disease into London has not yet been explained or cleared up, and it appears to be certain that the contagium was not carried by living cattle. Until the countries with which we have commercial relations have rid themselves of such plagues, our risks will always be present. That they can be freed from them the experience of this country testifies; but this can only be brought about by mutual agreement, and concerted action of the same vigorous and expensive character that was resorted to in the United Kingdom. Unless they agree to this, individual effort is worse than useless; for their land boundaries cannot be compared with our sea frontier for shutting out such diseases, and so long as one infective country remains passive the others are open to invasion, and even ourselves cannot be considered safe.

Protective inoculation is assuredly the most scientific way of dealing with the contagious diseases of animals, but it is certainly the most difficult, onerous, protracted, and on the whole less efficacious measure than the "stamping out" system. England has conclusively demonstrated that these scourges, which have for so long inflicted such grievous injury on nations and robbed them of such enormous wealth, are amenable to rigidly enforced sanitary police regulations. It only remains for other nations which are now suffering from the plagues she has suppressed, to follow her example, and in the course of time they will also reap the benefit. The *raison d'être* of veterinary surgeons will then be a problem for the veterinary schools to solve; certainly, like Othello, their occupation will be gone, at least to a very great extent, and they may console themselves that in having lent themselves to the carrying out of their own *Hari Kari*, as they have it in Japan, they have benefited the civilised world—they have sacrificed themselves for the good of mankind and of animals.

THE REGULAR PROGRESSIVE MOVEMENTS OF THE HORSE.*

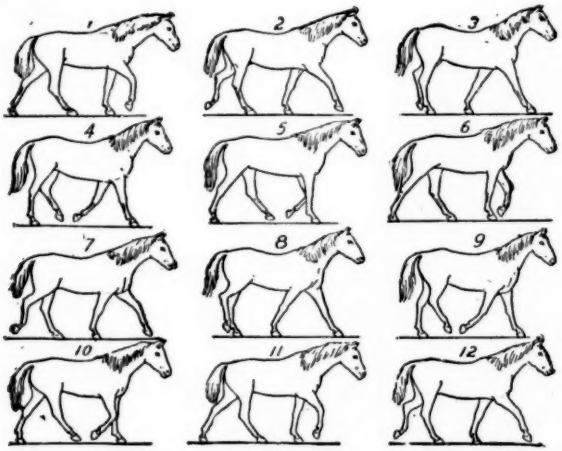
We are enabled, by the courtesy of Messrs. Funk and Wagnal, of New York, to give a series of illustrations and definitions on the regular progressive movements of the horse, taken from advance sheets of the new Standard Dictionary, which that firm is now preparing. They are from photographs by Mr. Eadweard Muybridge, whose qualifications for this work are thus described:—

Mr. Eadweard Muybridge, under whose personal direction the accompanying plates of the movements of horses were made, and who edited all the defini-

* From *Bell's Weekly Messenger* of January, to the courtesy of the editor of which we are indebted for blocks that illustrate the article.

tions of the gaits of the horse that will appear in the Standard Dictionary, has given more than twenty years' study to the subject of animal locomotion, and is the recognised authority on this subject both in America and Europe. As far back as 1872, under the patronage of Senator Leland Stanford, who contributed 40,000 dols. for the purpose, he began at Palo Alto a series of experiments with the famous horse Occident; and in 1883 the University of Pennsylvania placed 30,000 dols. at Mr. Muybridge's disposal and instructed him to make, under its auspices, a comprehensive investigation of "Animal Locomotion" in the broadest significance of the words. The photographs here reproduced of the consecutive phases of the movements of the horse were taken by an automatic electro-photographic apparatus called the zoopraxiscope, invented by Mr. Muybridge, and were executed with wet collodion plates, with exposures at regular intervals of distance or of time, in some instances not exceeding the one five-thousandth part of a second.

We give the six plates, which are thus defined in the new dictionary referred to :—



The Walk.
The stride is completed at 11, and 12 is the same as 2.

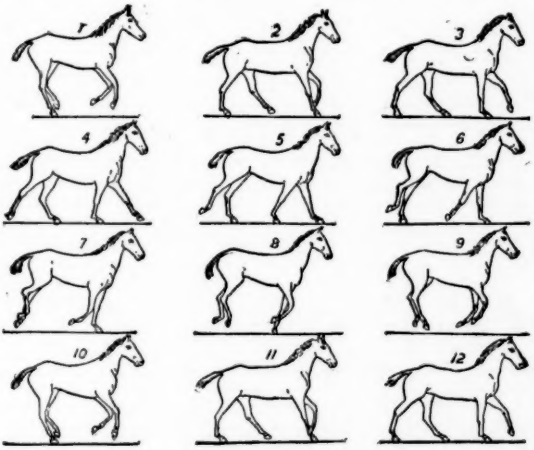
WALK, *n.* A method of progression, common to nearly all the terrestrial vertebrates, which is effected by a regulated succession of limb-movements, as described below.

☞ If in the quadrupedal walk, the notation begins with the landing of a right hind foot, the consecutive foot-fallings will be the right fore foot, the left hind foot, the left fore foot, followed by its diagonal hind, with which the record began. The time intervals of foot-fallings vary with different species of animals, but their sequence is invariably the same withal—the apes alone excepted, with which the landing of a hind foot is usually preceded by that of its lateral fore-foot. During a single stride of a quadruped in an ordinary walk, it is supported in eight different ways—twice upon the laterals, twice upon the diagonals, twice upon two hind feet and one fore foot, and twice upon two fore feet and one hind foot.

It is thus seen that when a horse during a walk is on two feet, and the other two feet are suspended between the supporting legs, the suspended feet are laterals. On the other hand, when the suspended feet are severally in advance of and behind the supporting legs, they are diagonals. These invariable rules seem to be neglected or entirely ignored by many of the most eminent animal painters of modern times.

CANTER, *n.* A system of quadruped locomotion in which the feet are landed on the ground in the same consecutive order as in the walk, but not with the same comparative intervals of time. See WALK.

Assuming that in the canter the notation is begun after a propulsion through the air with a final thrust by the left fore foot, the landing will take place on the right hind foot, followed in order by the right fore, the left hind, and the left fore, from which a succeeding thrust off the ground will be effected. The consecutive supporting feet are: (1) the right hind foot; (2) the right hind and right fore feet; (3) both hind and right fore feet; (4) the left hind and right fore feet; (5) the left hind and both fore feet; (6) the left hind and left fore



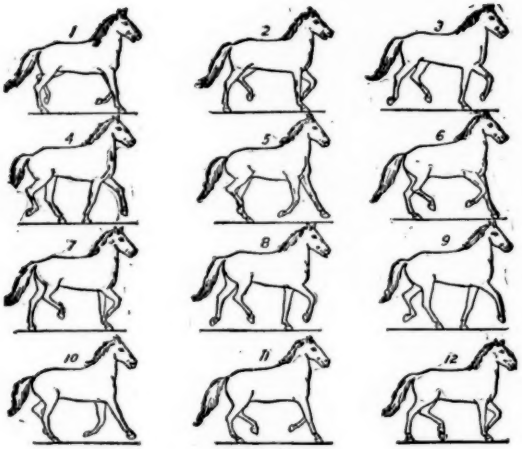
The Canter.
The stride is completed at 10, and 11 and 12 are reproductions of 2 and 3.

feet; (7) the left fore foot alone, from which the animal leaves the ground.

The canter is usually regarded as a slow gallop, probably from the facility with which a change from one gait to the other can be effected; an important difference will, however, be observed.

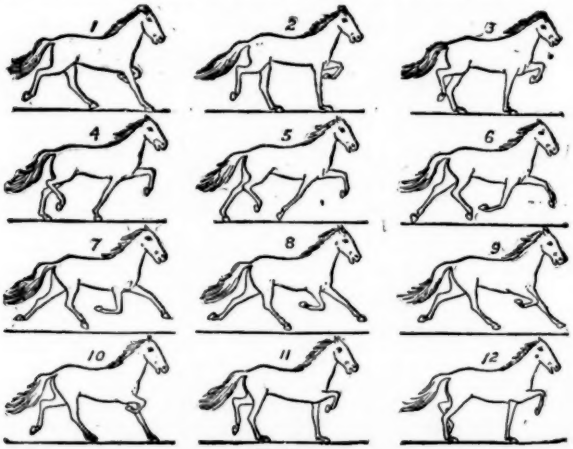
AMBLE, *n.* A method of progressive motion with the same sequence of foot-fallings as in the walk, but in which a hind foot or a fore foot is lifted from the ground before its fellow hind foot or fellow fore foot is lifted therefrom, the support of the body devolving alternately upon one foot and upon two feet, the single foot being alternately a fore foot and a hind foot, and the intermedial supports alternately diagonals and laterals.

The amble is natural to the elephant, and in some countries to the horse, the mule, and the ass. The sequence of foot-fallings is the right hind, the

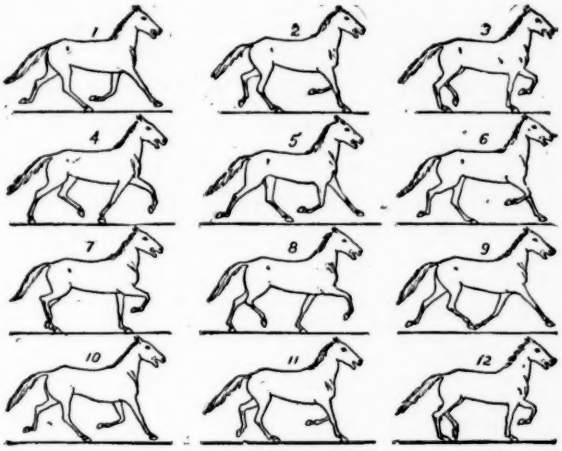


The Amble.
The stride is completed at 11.

right fore, the left hind, the left fore, beginning again with the right hind foot. At no time during the stride is the body of the animal unsupported. The amble has been erroneously confused with the rack or pace; it is the most gentle and agreeable to the rider of all methods of locomotion of the horse, whereas the rack is probably the most disagreeable and ungraceful.



The Trot.
The full stride is not completed until the right fore foot in 12 is brought to the ground, as in position 1.

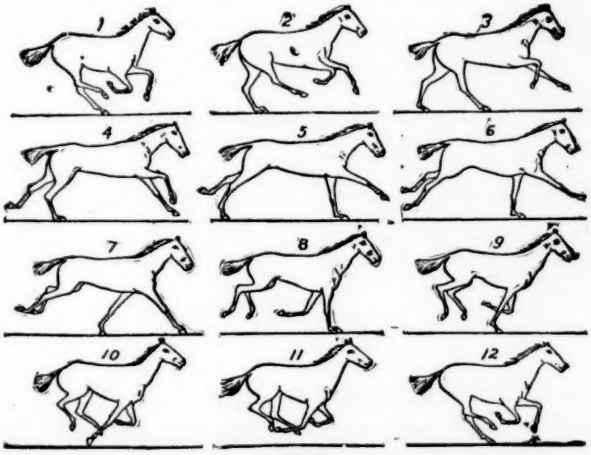


The Rack or Pace.
The stride is completed at 10, and 11 and 12 are reproductions of 2 and 3.

"Out of the old hackney pace to a fine easy *amble*."—BEN JONSON, "Every Man in His Humour."

"The grey mare . . . . breaking from her sober *amble* into a gentle trot."—DICKENS, "Barnaby Rudge."

The *amble* and the walk are the only regular progressive movements of the



The Gallop.
The stride is completed at 12.

horse, wherein the body is never without the support of one or more legs; in all others the weight is entirely off the ground for a longer or shorter period.

TROT, *n.* A more or less rapid progressive movement of a quadruped in which the diagonal limbs act nearly simultaneously, and during which the body is entirely without support for varying intervals of time and distance.

When a horse is trotting at a high rate of speed, the fore foot usually precedes its diagonal hind foot in being lifted from and placed upon the ground, and the body will be entirely without support for about one-half the total length of the stride. Beginning the notation with the landing of the right fore foot, the order of the supporting feet will be: (1) the right fore foot; (2) the left hind and right fore feet; (3) the left hind foot; (4) without support; (5) the left fore foot; (6) the right hind and left fore feet; (7) the right hind foot; (8) without support. The time during which one foot alone is on the ground is very brief.

It appears somewhat remarkable that, until quite recently, many experienced horsemen were of opinion that during the action of the *trot* one foot of a horse was always in contact with the ground.

RACK, *n.* A method of progressive motion by a quadruped in which two lateral feet are, with nearly synchronous movement, placed upon and lifted from the ground, alternating with the other laterals, the body of the animal being in the intervals entirely without support. Sometimes called the PACE.

With some animals the rack is an hereditary movement, with others it is acquired. A trained horse can make faster progress by racking than by trotting.

The *rack* differs from the trot in the nearly synchronous action of the laterals instead of the diagonals.

GALLOP, *n.* The most rapid method of progressive quadrupedal motion (sometimes erroneously called the *run*), in which the animal springs into the air from a fore foot and lands upon the diagonal hind foot.

If the notation of a stride by the horse during a gallop begins with the landing with a hind foot upon the ground—as, for example, the left hind foot—the right hind will next strike the ground and at a considerable distance forward; then follow in succession the left fore foot and the right fore foot, at a distance from each other sometimes equal to the height of the animal. The consecutive foundations of support (beginning the notation as above) are:—(1) the left hind foot; (2) both hind feet; (3) the right hind foot; (4) the right hind and the left fore feet; (5) the left fore foot; (6) both fore feet; (7) the right fore foot, from which the animal will spring into the air, in which phase (the only one of the gallop when the animal is entirely off the ground) all of the legs are flexed under the body. The first foot to strike the ground will be the hind foot diagonal to that from which the spring was effected.

This movement (the *gallop*) has in all ages been employed by artists to convey the impression of great speed, although, curiously enough, the phase in which the horse has been almost invariably depicted is one which is impracticable during uniform progressive motion, and conveys no such impression to the careful observer.

> "Then faint afar are heard the feet
> Of rushing steeds in *gallop* fleet."
> —SCOTT, "Lady of the Lake."

CARCEAG, OR HÆMORRHAGIC FEVER OF THE SHEEP.

IN November 1888, V. Babés reported to the Paris Academy of Sciences that the widespread and very deadly disease of Roumanian cattle, and which he designated *microbic hæmoglobinuria*, had the same cause as Texas Fever—

that is a *coccus* parasitic in the red corpuscles of the blood; and he proposed to class it among the most simple of the bacteria and protozoa

On the 22nd of last August, the same bacteriologist announced to the same Academy, through the medium of Chauveau, that the equally fatal disease called "carceag" which prevails among sheep in the marshy regions of the Danube, as well as in the very fertile and often submerged islands in that river, is likewise due to a *hæmatococcus* that has much analogy to the parasites observed in the red corpuscles of the Roumanian and Texan cattle.

This carceag is an acute febrile disease, accompanied by hæmorrhages and œdemas, and often determining an intense hæmorrhagic, frequently necrotic, inflammation of the rectum, and sometimes hæmoglobinuria.

Rigors, inappetence, prostration, persistent decubitis, moaning, hæmorrhagic or diarrhœic dejections, and the urine sometimes sanguinolent—such are the symptoms with which a moiety of the animals succumb about the second or third day, the remainder recovering slowly after several weeks.

At the autopsy the muscles appear as if cooked; there is œdema of the connective, general and sub-serous, tissue; the serous membranes are ecchymosed; the digestive mucous membrane is hyperæmic, often hæmorrhagic, in patches, as are also the lungs; the spleen is somewhat hypertrophied, red, and softened, while the liver and kidneys are pale and friable.

In the spleen, and more especially in the hæmorrhagic œdemas of the serous membranes, but less abundantly in the mass of the blood, are found many red corpuscles containing one coccus, rarely two *cocci*; these are round non-motile, about a half μ sometimes marked by a transverse line, and readily stained by methyl-violet.

From the above description it is evident that this hæmorrhagic fever of sheep is the result of an alteration in the blood brought about by these hæmatococci. Babés has been able to produce it by inoculation twice in four attempts, with ten grammes of blood from the spleen; but he has not yet succeeded in cultivating the parasite, which he thinks exists in marshes and develops under the influence of certain meteorological conditions favourable to the appearance of the disease.

This mode of evolution seems very probable, and it is through the digestive apparatus, which is most severely attacked, that the parasitic infection should take place, although it may also do so by the respiratory apparatus. On the other hand, the hæmatococcus in all likelihood fabricates very irritant toxines, to judge by the violent local inflammations set up, and the intense febrile disturbance that accompanies their absorption.

It is much to be desired that Babés may soon succeed in isolating, and so more completely studying the very interesting microbic parasites he has discovered in the red blood corpuscles of the Roumanian cattle and sheep, as also those of the Texas cattle. From what is already known, it is easy to anticipate the economic importance of future investigations.—*Recueil de Méd. Vétérinaire.*

PROTOZOA AS PARASITES IN ANIMALS.

In an address recently delivered in the theatre of the laboratories of the Royal Colleges, London, by Dr. Galloway, on the "Parasitism of Protozoa in Carcinoma," reference was made, in connection with this subject, to protozoa as parasites in animals, the *Coccidium oviforme* being taken as the type. Though this parasite and the pathological changes to which it gives rise have been described in our translation of Neumann's on the Parasites and Parasitic diseases of the Domesticated Animals, yet there is so much that is interesting

and novel in Dr. Galloway's remarks as to warrant us in reproducing what he said as to protozoa in animals.

* * * * *

As is now well known, the organisms which have been so frequently mentioned of late in connection with carcinoma belong to the division of the protozoa; and if I devote part of the time at my disposal to the study of a disease characterised during part of its course by the formation of tumours occurring in one of the lower animals, and undoubtedly caused by a protozoon, I shall carry out another of the suggestions of the lecturer already quoted, who pointed out that much light may be thrown on the formation of tumours in man by the study of growths in other organisms, and at the same time fulfil the purpose in my mind when I commenced this inquiry of obtaining a clear idea of some of the characteristics of the class of micro-organism which is now suggested as the cause of cancer.

The animal which I have chosen as the type of those infested by protozoa is the rabbit, partly on account of the ease with which it may be observed, and because an epidemic of the disease in question prevailed in the laboratory at the time when the investigation commenced, but principally because the life-history of the parasite which is the cause of the disease is very completely known, and may be looked upon as typical of many others allied to it in organisation.

Portions of this life cycle have been commented on so recently in certain quarters, that I shall draw attention mainly to the points appearing to be of special interest for the purposes of this lecture, and refer those interested to special investigations on the subject,* and especially to the recently published account by Dr. R. Pfeiffer.

This affection of rabbits is brought about by the influence of one of the sporozoa (*coccidium oviforme*, Leuckart) which infests the intestine, bile ducts, and livers of diseased animals in myriads. The disease is so common in certain hutches and warrens near London,† that the keepers recognise it readily, and distinguish it by the "wet snout" which the affected animals exhibit. It is most fatal in young rabbits; which become affected as soon as they cease to suckle and begin to eat green food. They lose flesh rapidly, suffer from enteritis of more or less acute character, and many die in from eight to fifteen days after the initial symptoms. The adult animal is more rarely infected, and as a rule resists the disease. The development of the parasite which brings about this very fatal disease may be considered in two stages, external to and within the host.

Development external to the Body.

The organism as it escapes from the alimentary canal consists of a firm, translucent cyst, enclosing a quantity of very granular protoplasm, which fills the whole cavity. The cyst, which is the striking feature of this period of development, is oval in shape, and measures about 36 μ in length and about 22 μ in breadth. Very soon after expulsion, and often while within the host, the protoplasmic contents contract, and form a sphere lying free within the cyst wall. Under suitable circumstances this ball of protoplasm pushes out projections, at first flattened, but soon becoming more distinct, till at length it divides into four distinct smaller spherules. Each of these protoplasmic masses becomes somewhat elongated and forms within itself two crescentic

* Leuckart, R., *The Parasites of Man*, English edition, 1886; Balbiani, G., *Lecons sur les Sporozaires*, Paris, 1884; Pfeiffer, L., *Die Protozoen als Krankheitserreger*, Jena, 1891; Malassez, M. L., Notes sur la psorospermose du foie, etc.; *Arch. de Médecine expérimentale et d'Anatomie pathologique*, vol. iii, 1891; Pfeiffer, R., *Beitrage zur Protozoen-Forschung*, Heft i, Berlin, 1892; Delépine, S., for bibliography, *Trans Path. Soc. Lond.*, vol. xli., 1890.

† Hutchinson, J., sen., *Archives of Surgery*, vol. iii, 1891.

germs lying in its long axis, leaving unutilised a small nuclear mass. A wall of less density than the outer cyst is formed round each of these groups of two germs, and then this stage of development is complete.

In this condition the parasite seems very resistant to injurious influences, and is capable of remaining alive for at least six months.

Methods.

For the purpose of noting the changes which I have briefly mentioned, the parasites obtained from recently killed animals may be placed on a cover glass and examined as a drop cultivation. The method which I have found most useful is that recommended by Professor Delépine, under the name of inter-lamellar films.* In this way the cycle of development which I have described will be accomplished in less than a week, the transformation into four daughter cells being noticeable on the third day, at the ordinary temperature of a room.

On commencing these observations, the ordinary bacteriological processes were made use of, with very little result. Tubes of sterilised blood serum, bouillon and other media were utilised and the usual precautions observed. Subsequently the inoculated materials were placed in incubators at temperatures of 20° C. and 38° C. The more elaborate the precautions, however, the less result was obtained. The organism flourished best when freely exposed to the atmosphere. And as R. Pfeiffer observes, the presence of carbonic acid and the change from the temperature of the body to the cooler external temperature aid in their development. A warm temperature and want of free aëration modify and even prevent the changes described, and influences of this sort no doubt account for the great discrepancies as to time which may be noted between the accounts given by different observers.

I have drawn attention to these facts to show how readily this important external cycle of development may be influenced.

Development within the Body.

When an uninfected young rabbit swallows the parasite in the larval or resting condition just described with its food, the resisting capsules are acted on by the digestive ferments, so that the crescentic germs already mentioned become free. A new cycle of intense activity is now observed. These crescents become rounded and probably acquire the power of locomotion. Most of the naked amœboid forms of the organism divide into numerous small crescentic sporules, which, in their turn, also become free, and it seems probable that this "endogenous sporulation" may be repeated. Thus myriads of young sporozoa are soon found in the alimentary canal, the gall bladder, and the bile ducts of the infected animal. In this stage the organisms are very readily destroyed on being removed from the body, showing a marked difference, so far as resistance is concerned, when compared to the organism in its resting stage.

The sporules, on being set free from the mother cell, have the power of entering the epithelial cells of the affected region, where they commence a process of growth and differentiation of their protoplasm, which ends in the production of the encysted parasite. It is said that several parasites may infect the same epithelial cell, but, in the adult condition, one parasite is seen to occupy the greater part of the distal region of the cell body, and no trace of others can be seen. In course of time the epithelial cell wall is ruptured, and the parasite escapes, without necessarily causing destruction of the host cell; it passes through the alimentary canal, gains access to the atmosphere, and thus meets the conditions necessary for recommencing the cycle of development.

* Delépine, S., *Lancet*, vol i, 1891.

Anatomical Changes produced in the Host.

Let me now pass in review the changes produced by this parasite, whose life history I have described, and especially those in the liver, where the disturbance is most obvious. The liver of an animal dead of the disease after the acute stage has passed, or killed when the condition has become chronic, is studded over with greyish-white areas, varying in size from a pin's head to that of a pea, usually rounded but occasionally somewhat branched in shape, resembling the aspect of chronic tubercle, a likeness which is more close as each spot of disease is filled with material which is apparently caseous. On examining these tumours, however, by means of microscopic sections, they are found to consist mainly of epithelium and connective tissue, which is arranged in the form of a very complex adenoma. The area of the bile duct affected becomes widened, and the space thus formed becomes filled up with the much hypertrophied and convoluted mucous membrane. The outer margin of the growth is marked off by a layer of well formed connective tissue varying in thickness from the surrounding hepatic substance. Lining this fibrous layer is the epithelium of the bile duct, which in most places has not preserved its typical cubical form, but is somewhat embryonic in character. The most striking feature of the tumour, however, is the extreme complexity of the processes projecting from the mucous coat. These projections are very finely branched, and thus the characteristic convoluted appearance is obtained. They carry with them a small quantity of fibrous tissue, and usually very large thin-walled vessels. Filling up the interstices of this adenomatous structure are seen multitudes of parasites in many stages of development. Some are encysted, and in this condition may be observed lying free, or still contained within the epithelial cells of the tumour. Naked forms may be seen from the smallest homogeneous globules of protoplasm, in all stages of granularity of protoplasm, according to their age, up to the adult form of the encysted parasite in which the protoplasmic contents of the cyst become very coarsely granular. These younger forms are seen usually lying embedded in the epithelial layer. If an animal still suffering from the acute form of the disease is examined, the crescentic spores due to "endogenous sporulation" may be seen if special precautions are taken.

If the animal recovers from the disease, the tumour just described commences—apparently in a very short time—to alter its appearance. Many of the parasites pass out of the body, the remainder show signs of granular and fatty degeneration, their cyst walls resisting longest and being for some time obviously empty. The fibrous boundary of the adenoma becomes thicker, contracts, and at length the lesion caused by the attack of the parasite heals, and its site is marked by a small concentric nodule of fibrous tissue.

In the small intestine the areas of mucous membrane affected show similar changes to those described; the protozoa penetrate deeply into the glands, the epithelial cells become infected, the mucous membrane is thickened, and there results a hypertrophied, adenomatous condition of the particular area involved.

Inoculation Experiments.

Before passing from this division of my subject, I wish to draw attention to certain attempts which have been made to produce this disease by artificial introduction of the organism. Messrs. Ballance and Shattock attempted to infect certain animals by means of "psorospermial material," both by subcutaneous inoculation and intravenous injection.* No note is made of the stage of development in which the psorospermial material was at the time. Mr. D'Arcy Power,† by means of specially-devised methods, has sought in this

* Ballance and Shattock: *Trans. Path. Soc. Lond.*, vol. xlii. p. 380.
† Personal communication.

laboratory to produce the disease by the implantation of coccidia on specially irritated epithelial surfaces; and has extended his experiments by the inoculation of material obtained from cases of Paget's disease of the nipple. Dr. R. Pfeiffer* has taken coccidia which have passed through their cycle of development external to the body, and were thus presumably in a stage capable of causing infection, and injected them directly into the liver and into the veins of presumably healthy animals. All these experiments have yielded negative results, while the feeding of rabbits with ripe coccidia has brought about the disease in animals presumably healthy; and, so far as we can judge, infection by the alimentary canal is probably the only method of infection. These facts throw light on the difficulty of infection by these organisms if the path chosen is not the one in which they meet conditions propitious for their development, and give an explanation of the apparently non-contagious character of this disease.

I have ventured to draw your attention in some detail to the life history of this sporozoon, as it is now so well known; but facts of similar significance may be derived from the study of sporozoa affecting man and other animals, especially invertebrata; and possibly even more guidance may be obtained in our researches into the cause of cancer, when the life history of such protozoa as those described by Laveran, Marchiafava, Golgi, Celli, and others in the blood of lower animals and man, becomes better understood.

Conclusions as to Protozoa in Rabbits.

It may in the meantime be taken as established in the case of the coccidium oviforme attacking the rabbit that:

1. A most important position of the developmental cycle of this parasite takes place only external to the body, under aërobic conditions.
2. Influences occurring outside the body delay, and even prevent, the external sporulation of the parasite, thus interfering with its infective power.
3. The host cannot be infected by coccidia inoculated directly from animals already suffering, thus proving that the disease, though infectious, is so only in a very special way.
4. The parasite infects the host by passing into the alimentary canal, where it meets suitable conditions for its future development.
5. The parasite enters and grows within epithelial cells without necessarily destroying them, and causes great proliferation of the neighbouring epithelium.

MALLEIN AND TUBERCULIN IN BELGIUM.

THE Belgium Minister of Agriculture has issued a circular dated November 22nd, 1892, giving official sanction to test inoculations for Glanders-Farcy and Tuberculosis. With the view of carrying these out efficiently, a depot of mallein and tuberculin has been established at the State Veterinary School at Brussels, from which supplies of these agents will be furnished to veterinary surgeons who may apply for them, the cost being 20 centimes (two pence) per dose, this to be paid for by the owner of the animals, the parcel to be forwarded post free. The circular contains directions for the employment of the mallein and tuberculin, and instructions as to the information veterinary surgeons are to furnish the Government with.

TUBERCULOSIS IN THE STATE OF NEW YORK.

IN its last session, the Legislative Assembly of the State of New York passed an Act approved by the Governor, dated May 5, 1892, "An Act in relation to tuberculosis in milch cows and other cattle and infectious and contagious diseases of cattle."

* *Loc. cit.*

The Act places the work under the supervision of the State Board of Health, and directs it to use all reasonable means for ascertaining the existence of diseases and for preventing all injury from tuberculosis in milch cows; and to take measures to suppress this disease promptly. It also contains clauses enabling inspectors appointed under its provisions to call upon the sheriff in the case of interference with duties, and providing for the indemnity to the owner for slaughtered animals of the actual value at the time they are killed.

For carrying out its provisions, five thousand dollars (£1,000), are appropriated. The payment for slaughtered cattle is to be settled by the court of claims, and apparently to be paid out of the general fund.

During last September, Doctor Austin Peters was appointed Superintendent of Investigations in Tuberculosis, and Dr. Cooper Curtice a Cattle Inspector, by the Board of Health. With this small force they have begun, and are carrying on their operations in Westchester County. This law will affect the largest industry in the State of New York, the milk production of which is larger than that of all the other States put together. It is estimated that there are 11,600,000 milch cows in the State of New York, and about 40,000,000 dollars' (£8,000,000) worth of milk is consumed in the State every year.

SWINE-PLAGUES IN DENMARK.

As is now well known, for a long time it is supposed that two distinct and very destructive diseases of swine were confounded, especially on the Continent and in the United States of America, and designated by one name; but now, by the majority of authorities, they are recognised, and though they oftentimes prevail in the same locality at one time, yet the veterinary expert who has made a study of them can, it is stated, distinguish one from the other. In America they are known as "Swine Plague" and "Hog Cholera"; in Germany as "Sweinseuche" and "Rothlauf"; and in France as "Pneumo-Entérite Infectieuse" and "Rouget." Until a few years ago, the so-called "Rouget" was almost unknown in Denmark, the Hog Cholera or infectious Pneumo-enteritis alone making serious ravages. But now the former is rapidly on the increase, and, indeed, for the last few years it has been steadily becoming more prevalent.

Krabbe, in the *Tidskrift for Veterinærer* for 1892, shows that in 1887 there were 387 cases of Rouget in Denmark; in 1888, 786; in 1889, 1,019; in 1890, 1,372; and in 1892, 2,146 cases. The most severely affected provinces were those of the north-west, the proportion of pigs attacked being, in 1891, 8·2 per cent. of these animals in the circle of Viborg, and 7·5 per cent. of those of Hjörring and Aalboy.—*Revue Vétérinaire.*

MUSCULAR TUBERCULOSIS IN AN OX.

HERTWIG reports in the *Zeitschrift für Fleisch-und-Milchhygiene* for 1892, that on examining the carcase of a four years old ox, extensive primary tuberculosis of the mediastinal lymphatic glands was discovered. The intestines were not affected; but in the parenchyma of the lungs, liver and kidneys were embolic centres, the size of a hazel nut. The inguinal and sub-brachial lymphatic glands were enlarged from three to five times their normal size, and contained caseous spots of various dimensions. In the subcutaneous and inter-muscular connective tissue, deep among the muscles of the neck, the inferior aspect of the thorax, and about the shoulders and on their inner surface, were also found flat patches and cords formed by an agglomeration of small and large tubercles, which penetrated the muscle substance along with the connective tissue.

The tubercular character of these lesions was demonstrated by a microscopical examination of them, as well as by positive results obtained in inoculating rabbits.

TUBERCULOSIS IN SLAUGHTER ANIMALS.

THE *Revue Scientific* remarks that we have very imperfect information as to the frequency of Tuberculosis among animals which serve as food for man in various countries.

In Prussia, for 1891 the proportion affected was 6·30 per cent. for the whole country, but it was 12 per cent. in the Berlin abattoirs. These figures have only reference, however, to bovine animals, for among 53,281 horses killed for food only 40 were discovered to be tuberculous, or scarcely 0·08 per cent.

In France the proportion of bovines condemned because of Tuberculosis is much smaller—less than 1 per cent., which would seem to show that in Prussia every animal in which tuberculous lesions are found, even when very limited, is condemned, while in France it is only those in which tuberculosis is generalised and all organs are invaded that are seized.

It is also manifest that the proportion of cases found in the abattoirs of the large towns increases with the care taken for their discovery. Riesch, for instance, mentions that at Dresden in 1888 there were only 2 per cent., and in 1889, 3·2 per cent. tuberculous cattle reported; but since the number of Veterinary Inspectors has been considerably augmented, the proportion has risen to 14·4 per cent. And Bromberg was until lately rather remarkable for the rarity of cases of this disease, but since inspection has been carried out by experienced veterinarians, the proportion of tuberculous animals has reached the rather imposing figure of 26·2 per cent.

Goring gives for the whole of Bavaria 1·62 per 1,000 in 1887, and 2·25 per 1,000 for 1879; Adam, who inspected the slaughter animals at the Augsburg abattoir for ten years, gives 2·6. For the Grand Duchy of Baden Baden, Lydtin has 2 per 1,000; but Jena Zürn found 20 per cent.; Schmidt, in Holland, 20 per cent.; Nathusius, among the Dutch breeds, reported 50 per cent.; Wolf, in the Circle of Grünber, 15 to 20 per cent.; Schanz and Albrecht in several parts of the Hohenzollern, Pomerania and Bromberg, 50 to 60 per cent.; and Haarstick has even announced 60 to 70 per cent. of tuberculous cattle at Hildesheim.

If only cases of generalised Tuberculosis are taken into account, of the 13,688 cases of the disease found at Leipsic, the following were the proportions:—bullocks, 2·4 per cent.; calves, 5·1 per cent.; cows, 3·7 per cent.; bulls, 2·6 per cent.

The differences in the statistics are evidently due to the amount of care with which the animals are examined, and also to the fact that many veterinary surgeons do not reckon cases in which the disease is very limited.

In the *Bericht über das Veterinarwesen in Sachsen* for 1891, it is stated that in a total of 51,444 cattle killed in that year in the abattoirs which have furnished complete statistics, 9,476 were found to be tuberculous, or an average of 17·40 per cent. The smallest number was at Dirna, which had only 2·09 tuberculous; it was highest at Frankenberg, with 28·78 per cent. Of 126,822 calves slaughtered, there were 78 tuberculous, or 0·06 per cent. With regard to pigs, 230,808 of these animals were killed, and 2,477 of them were reported as tuberculous, or 1·070 per cent. Of 85,701 sheep there were 30 affected or 0·03 per cent.

Of the 9,476 tuberculous cattle, 477 were detected before slaughter, or 5·03 per cent. of the diseased; and 863 were seized after slaughter or 9·1 per cent

of the tuberculous and 1·58 per cent. of the slaughtered animals; 8·136 were allowed to be sold for consumption as human food, or 85·86 per cent. of the tuberculous cattle and 14·9 per cent. of the number slaughtered.

THE FÆCAL THEORY OF TETANUS.

SORMANI, in the *Centralblatt für Bakteriologie* for October, 1892, reports that numerous experiments have proved that the fæces of animals are frequently tetanigenic, and cites the following experiment as evidence of the resistance of the contagium. A dog received by ingestion a culture of the tetanus bacillus, and was fed exclusively on bread and boiled milk. Its fæces were tetanigenic for sixteen days, and the virulence of the microbe appeared to be in no way diminished by contact with the gastric secretions. This would account for herbivorous and carnivorous animals receiving the germs of Tetanus by means of forage soiled by coming into contact with the ground, and their scattering them everywhere about.—*Revue Vétérinaire.*

DIAGNOSTIC VALUE OF TUBERCULIN.

EVIDENCE is rapidly accumulating with regard to the value of Tuberculin as an aid in the diagnosis of bovine tuberculosis, as experiments have been carefully and persistently conducted in every European country and in the United States of America. Among the latest reports of such experiments is that of Professor Jensen, of the Copenhagen Veterinary School, which appears in the *Maanedskrift for Dyrtæger* for October and November, 1892. This authority has already published the results he had obtained in employing Tuberculin for the diagnosis of tuberculosis, and he now again refers to them in adding his statistics to those given by Nocard, Bang and Bergstraud. From his figures it is shown that in a total of 449 diseased animals submitted to this test agent, 426, or 90·8 per cent., manifested the characteristic reaction; 23, or 4·9 per cent., not reacting; while in 20 instances the result was doubtful. Of 279 non-tuberculous animals, 237 gave no reaction, or 81·7 per cent., while 42 showed such reaction, or 14·5 per cent.; in 11 cases the results were doubtful.

These figures, the *Revue Vétérinaire* remarks, are sufficiently eloquent, and demonstrate the great diagnostic value of Tuberculin; while an analysis of the experiments indicates that the majority of the unsuccessful inoculations could be explained and often predicted.

THE FRENCH ARMY VETERINARY DEPARTMENT.

IN the *Projet de loi* relative to the *cadres* and effectives of the Active and territorial armies which was laid before the Chamber of Deputies on November 24th, the number and quality of the Military Veterinary Surgeons estimated for was as follows:—

First-Class Principal Veterinary Surgeons	6
Second-Class Ditto	6
First-Class Veterinary Surgeons	153
Second-Class Ditto	155
Assistant Veterinary Surgeons	115
Total	435

This new estimate only allows an increase of two Principal Veterinary Surgeons—one in each class—thirteen First-class and four Second-class Veterinary Surgeons, the Assistants remaining the same in number.

THE FITZWYGRAM PRIZE COMPETITION.

We are desired to announce that Lieut.-General Sir F. Fitzwygram proposes to give his Veterinary Prizes this year, as usual. The conditions will be much the same as for last year's competition.

Reviews.

THE MICROSCOPE, ITS CONSTRUCTION AND MANAGEMENT. BY DR. HENRI VAN HEURCK. ENGLISH EDITION BY WYNNE E. BAXTER, F.R.M.S., F.G.S. (London: Crosby Lockwood and Son, 1893.)

This is a grand book in size, in treatment, and in illustration. The microscope occupies such a prominent position now-a-days in scientific, and especially medical progress, that special treatises on its construction and management, as well as upon its use, are somewhat numerous; but surely such a splendid work as this has never yet been devoted to it. The author is Professor of Botany and Director of the Antwerp Botanical Gardens, but this English edition is re-edited and augmented from the fourth French edition by the well-known London Coroner, Wynne E. Baxter, who is also Secretary to the Worshipful Company of Farriers, and to whom Professor Van Heurck pays a well-merited compliment for the manner in which he has performed his task.

The work is divided into books and chapters, in which elementary optics and Professor Abbe's theory of microscopical vision are dealt with; the microscope generally, and all its different parts and accessory apparatus; the different kinds of microscopes; the use of the microscope and its different makers, among whom we are pleased to observe that Van Heurck places those of England in the foremost rank; then come the measurement and reproduction of microscopical objects by photo-micrography, etc.; the cause of errors in microscopical observations; preservation of the microscope; general rules for preparing microscopical objects; the microscopist's library; and interesting notes on the history of the instrument, with a letter from Czapski as to its future.

The work, as will be seen from this glance at its contents, is a complete treatise on the microscope and microscopy, and forms a most interesting volume for all who work in any of the branches of science in which this wonderful instrument is employed. It is magnificently got up, the woodcuts being first class and 250 in number, with two plates, while the typography and paper leave nothing to be desired. It may be noted that among the English makers of microscopes, the author speaks in very high terms of Messrs. Watson and Son, High Holborn, London, and states that their most perfect instrument, and one of the most precise and convenient that exists, is the one which they have named Dr. Henri Van Heurck's Microscope for the study and photography of Diatoms and all delicate researches. It is considered a perfect instrument, and yet the price is only £16. This is much less than the large continental models cost.

We have said all that it is possible to say in praise of the book, and we must offer Mr. Baxter our sincere congratulations for bringing before English microscopists such an excellent treatise in such a fascinating style. Nothing better or finer is to be found in any language, we are sure.

A MANUAL OF VETERINARY HYGIENE. BY VETERINARY-CAPTAIN F. SMITH, M.R.C.V.S. (London: Baillière, Tindall and Cox, 1893.)

In 1887 the first edition of this work was published, and now in six years a second edition is demanded, which is a proof of the merits and the need

there was for such a manual, and is sufficient justification for the high recommendation we gave it on its first appearance. In this new edition there are no notable changes to record, indeed, the work remains unaltered, except for a few corrections of minor importance. Therefore we can only reiterate our former opinion of it, and wish this edition as ample success as the first.

THE SCOTTISH FARMER. (Glasgow: 93, Hope Street.)

All those interested in the cultivation of the land and in the rearing, perfecting, and successful utilisation of the domestic animals, will welcome the appearance of a weekly periodical devoted to these subjects, and started in a new centre—the great commercial capital of Scotland. No. 5 of this latest addition to agrarian periodical literature is now before us, and gives us reason to anticipate a successful career for the venture, and a further source of valuable information and guidance for those we have just mentioned. With such a list of writers assisting in its literary section as those it enumerates, and among whom we find Prof. McCall representing the veterinary profession, it cannot fail to give every satisfaction, while its editing leaves nothing to be desired. The low price at which each number is issued (twopence), requires that it should have a large sale, for it is exceedingly well got up in every respect. It certainly has our very best wishes for a useful and prosperous career, for which abundant support is a necessity, and which it well deserves, judging by the sample courteously forwarded to us.

Army Veterinary Department.

Gazette, February 14th.

Veterinary-Captains J. W. Evans, C. W. Gillard, I. Matthews, F.R.C.V.S., and G. J. R. Rayment, F.R.C.V.S., to be Veterinary-Majors.

A new warrant has been issued from the War Office, which improves the position and pay of Army farriers. For the future, a Sergeant-Farrier, if recommended, will be granted the rank of Staff-Sergeant-Farrier, with extra pay of 6d. per diem. This rank will be equivalent to that of squadron Sergeant-Major, and will give him all the privileges of that rank, such as choice of quarters, and increased scale of fuel and light, as well as an increase of 3d. a day in his pension, which will be 2s. 6d. per diem after twenty-one years' service.

A rank has also been created of Corporal-Shoeing-smith, and it is anticipated that four shoeing-smiths of each regiment will, if recommended, be given this rank. They will receive 6d. a day more than the shoeing-smith, and they will also be granted the pension of their rank, which is 1s. 8d., being 7d. per day more than that of shoeing-smith.

No soldier will be appointed Shoeing-smith for the future unless he re-engages to serve twelve years with the colours.

Cavalry regiments will in future be shod with 50 per cent. machine-made shoes, and an equal number made in the regimental forges.

Obituary.

WITH deep regret we have to announce the death, at a comparatively early age, of Archibald Robinson, F.R.C.V.S., of Greenock, this melancholy event having occurred on January 27th, after a long illness. Mr. Robinson graduated in 1873, but he passed a considerable time at the Lyons Veterinary School, then under the direction of that most distinguished veterinarian and physiologist, Dr. Chauveau, with whom he was a favourite pupil. At Lyons he saw much of the work upon which Chauveau was then engaged, and which has

since made that accomplished scientist so famous as an experimental pathologist. Under such training, and with such an example, it need not be wondered at that our deceased colleague was fired with enthusiasm in his professional career, and that he took part in some of the scientific movements in which veterinary medicine is so much concerned. He attended the International Congress on Tuberculosis held in Paris, and entered actively into its discussions. He was also present at the International Veterinary Congress that met in the same city three years ago, and was a *persona grata* among its leading members. He became a Fellow of the Royal College in 1886, and was a member of the Board of Examiners from 1880 to 1887. Mr. Robinson was greatly esteemed by all who knew him intimately, and so far as professional capabilities went there can be no doubt that he was one of the most proficient veterinary surgeons in this country, though his modesty and retiring disposition did not allow him to do justice to his abilities.

Another sad loss the veterinary profession has sustained by the very sudden and untimely decease of Thomas Briggs, F.R.C.V.S., of Bury, Lancashire. He went to a consultation at Halifax on February 3rd, was suddenly seized with illness, and died next day, syncope being the immediate cause of death. What renders this melancholy event still more sad is the circumstance that he was only recently married, and consequently leaves a young widow to deplore a painful bereavement. Mr. Briggs entered the profession twenty-one years ago and became a Fellow in 1877; he was also recently a member of Council, but did not seek re-election when his term of service had expired. His manly, upright bearing, and generous genial nature endeared him to all those who regarded him as a cherished friend, while his integrity and courteous bearing gained him the confidence and respect of all who met him in the course of his professional business. So highly was he estimated in Bury, that not long ago he was elected a Justice of the Peace for that town, a position he was well qualified to occupy with credit to himself and benefit to his co-citizens. Our profession can badly sustain such heavy losses as those it is now our painful duty to record—men young in years, of high character, and of great promise.

Parliamentary Intelligence.

HOUSE OF COMMONS, February 2nd.

TUBERCULOSIS.

Mr. GARDNER, replying to questions, said that tuberculosis was not one of the diseases to which the Cattle Diseases (Animals) Act, 1878, applied. If, therefore, an animal suffering from tuberculosis was destroyed, it was under the provisions of the Public Health Act, on the ground that the animal was unfit for the food of man. There was no provision in the law to enable him to provide payment or compensation in such circumstances, nor could he undertake to extend the provisions of the Contagious Diseases (Animals) Act pending the report of the Royal Commission.

FOOT-AND-MOUTH DISEASE.

Mr. GARDNER, replying to Mr. Darling, said that foot-and-mouth disease existed at the present time in every country on the Continent of Europe, except Norway. Under these circumstances, he had no alternative but to maintain the order now in force. Replying to a further question, he said the law as it stood was based on the well-established fact that the slaughter of

animals on landing afforded no adequate security against the introduction of a disease of so highly infectious a character as foot-and-mouth disease. That being the case, he could not undertake to propose or support a Bill to the effect suggested in the question.

February 3rd.

GLANDERS IN LONDON.

Mr. T. H. BOLTON asked the President of the Board of Agriculture whether his attention had been called to the fact that the London County Council, in carrying out the recent order with regard to glanders and farcy, refused compensation to the owners of animals compulsorily slaughtered; and whether any further legislation was contemplated, with a view to the provision of reasonable compensation in such cases.

Mr. GARDNER said the recent order with regard to glanders and farcy left it optional on the part of the local authorities to slaughter and pay compensation for the animals suffering from either of those diseases. The London County Council unanimously decided not to exercise the power thus conferred upon them, and he did not feel that he should be justified at the present time in setting aside their decision. In any case, he did not think that any further legislation would be necessary.

Mr. BOLTON asked whether, having regard to the great and serious danger there was to human life, the right hon. gentleman would consider the desirability of representing the matter to the London County Council for reconsideration.

Mr. GARDNER said there were other provisions besides those providing for slaughter and compensation, and he thought it would be better under the circumstances to wait and see how the orders worked before taking further steps.

February 6th.

SWINE FEVER.

Mr. E. STANLEY asked the President of the Board of Agriculture whether, having regard to the fact that pleuro-pneumonia had been so successfully dealt with and so largely diminished under the Act of 1890, he had any intention of introducing a Bill to enable the Board of Agriculture to deal with swine fever in the same manner.

Mr. GARDNER said that any measure dealing with swine fever must differ in important respects from the Act of 1890, dealing with pleuro-pneumonia. He was anxious to ascertain whether any extra measures could be adopted, and he had appointed a Departmental Committee to consider the whole subject. Lord Edward Fitzmaurice had kindly consented to act as Chairman of the Committee, and he hoped the inquiry would not be protracted.

PLEURO-PNEUMONIA.

Mr. GARDNER, in replying to Mr. Chaplin and Mr. Leng, said that since July last 41 cases of pleuro-pneumonia, forming part of 18 different cargoes, had been discovered among cattle imported from the United States. With regard to Canada, the number of cattle slaughtered by the Board of Agriculture in consequence of the discovery of pleuro-pneumonia amongst two cargoes imported from Montreal in October last was 1,394. These cattle had been traced to 79 different places in the counties of Aberdeen, Banff, Elgin, Fife, Forfar, Kincardine, Perth, and Ross. The amount paid in compensation was £18,130, but against this must be put the sum of £8,664 received for the carcases, &c. Four diseased animals in all were discovered amongst those imported, the fifth being a home-bred animal which had been in contact with

one of the beasts brought from Canada. Doubts were expressed by veterinarians in Scotland as to whether the disease detected was contagious pleuro-pneumonia; but the verdict pronounced by his own professional advisers was unanimous and unhesitating. Immediately upon the discovery of the diseased animals inquiries were instituted by the Canadian Government, and he was assured that, after the most exhaustive examination in every part of the country, not a single case of pleuro-pneumonia was found to exist. He could not, however, resist the conclusion, although he confessed he arrived at it with the greatest regret and reluctance, that the arrival of the diseased animals indicated either the existence of some centre of disease in Canada unknown to the authorities there or some deficiency in the law relating to the importation of cattle into the Dominion, and this being so, he had no alternative under the statute but to withdraw the privilege of free entry (hear, hear). He was aware of the strong desire felt in some districts in Scotland that the privilege should be restored, and he should be very glad to find himself able to give effect to those wishes. He could not say, however, that there was yet any such material alteration in the position as to justify his doing so; but he should give his attentive consideration to any further representations on the subject which might reach him either from the Canadian Government or elsewhere.

February 11th.

CANADA AND PLEURO-PNEUMONIA.

Mr. GARDNER informed Mr. Whitelaw that it would not be practicable for his Department to conduct for itself on the spot any investigation of the sanitary condition of Canada; but, as he had already stated, they were ready to give consideration to any information on the subject which might be received from the Canadian Government. He understood that the regulations at present in force in the Dominion required ninety days' quarantine in the case of cattle imported from the Eastern States of the United States, but some modification of this rule appeared to be allowed in the case of settlers entering Manitoba and the North-West Territories.

TUBERCULOSIS.

Mr. HOZIER asked the President of the Board of Agriculture whether there was any prospect of a measure being introduced to provide compensation for loss due to tuberculosis in cattle.

Mr. GARDNER said the subject was engaging his attention, but, at the present time, it would not be possible to adopt the suggestions of his hon. friend.

February 14th.

TUBERCULOSIS.

Mr. YERBURGH asked the President of the Board of Agriculture whether, in view of the recent Agricultural Conference having unanimously passed a resolution to the effect that tuberculosis should be included in the Contagious Diseases (Animals) Acts, he had taken any steps to secure an early Report from the Royal Commission upon Tuberculosis.

Mr. H. GARDNER: We have frequently been in communication with the Royal Commission in regard to this matter, and every endeavour is being made by them to expedite the completion of their work so far as is compatible with complete scientific investigation of the questions committed to them. The Commission are well aware of the interest and importance which attach to the subject.

SWINE FEVER.

Mr. YERBURGH asked the President of the Board of Agriculture whether, in view of the statement contained in the report of the Assistant Inspector to

the Veterinary Department of the Board of Agriculture for 1891, that "swine fever existed in 1891 in 47 counties in England, twelve in Scotland, and seven in Wales; 5,595 outbreaks were reported, 32,349 swine were attacked during the year, of which 15,229 were slaughtered, 14,112 died, 3,399 recovered, and 340 remained diseased at the end of the year;" and of the fact that effectual dealing with swine fever was of vital importance to the agricultural labourer, he would reconsider his decision to appoint a Select Committee to inquire into the subject; and would, without delay, in accordance with the resolution passed unanimously at the recent Agricultural Conference, include swine fever in the Contagious Diseases (Animals) Act.

Mr. H. GARDNER: The object of the mover of the Resolution, to which the hon. member refers, was, as I understand it, to recommend not that swine fever should be included in the Contagious Diseases (Animals) Acts, for this is already the case, but that the execution of the law and the payment of compensation for swine slaughtered should be transferred from local authorities to the Board of Agriculture, as was done, with great advantage, in the case of pleuro-pneumonia. The conditions under which swine fever is contracted and spread are, however, very different, and before I can propose legislation on the subject, I deem it essential that an investigation should be made by a Departmental Committee which can elicit the views of the various interests concerned. A similar Committee sat prior to the introduction of the Pleuro-Pneumonia Act. I may add that a very considerable diminution of the disease was shown during 1892, the number of swine attacked being only 13,957, as against 32,349 in the previous year. The disease, in fact, reached the lowest point recorded since 1884.

Proceedings of the Royal College of Veterinary Surgeon and Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL HELD JANUARY 5th, 1893.

W. J. MULVEY, Esq., President, in the chair.

Members Present:—General Sir F. Fitzwygram, Bart., Veterinary-Captain F. Raymond, Principal Walley, Professor Penberthy; Messrs. J. Burnett, J. Donald, W. A. Edgar, J. Fraser, C. Hartley, M. Hedley, W. Hunting, H. Kidd, A. W. Mason, T. H. Merrick, J. Nisbet, Veterinary-Lieut.-Colonel G. A. Oliphant, R. C. Trigger, F. W. Wragg, G. Thatcher (Solicitor), and A. W. Hill (Secretary and Registrar).

The late Mr. Cartledge.

The PRESIDENT said since the last meeting of the Council there had passed from amongst them a gentleman who had occupied the position of a member, and had held every office in the profession. He thought it was only fitting that the Council should pass a vote of condolence with his family, and express its regret at the loss, not only to them, but to the profession generally.

On the motion of Professor WALLEY, seconded by Mr. MASON, it was resolved that a letter expressing the condolence of the Council in the loss they had sustained be sent to Mr. Cartledge's family.

The SECRETARY reported that letters and telegrams regretting inability to attend the meeting had been received from Professor McCall and Messrs. Beddard, Taylor, and Simpson.

Presentations.

The PRESIDENT said amongst the presentations were a series of wax models by Professor Smith and Veterinary-Captain Butler. The models were works of art, and were a very valuable addition to the museum.

On the motion of Mr. TRIGGER, seconded by Mr. WRAGG, it was resolved that the thanks of the Council be accorded to Professor Smith and Captain Butler.

The SECRETARY reported the presentation of fæcal remains by Mr. Greenhalgh, of Leeds; also the following presentations to the library:—"Transactions of the Seventh International Congress of Hygiene and Demography," presented by Sir H. Simpson; 8th edition "Veterinary Medicine," by Mr. Finlay Dun; "Horses in Accident and Disease," by Mr. J. Roalfe Cox; two pamphlets on the "History of Veterinary Medicine in France," by Mr. Paul Cagny; "Calendar of the Royal College of Surgeons, England;" "Roaring in Horses," translated by Mr. T. J. W. Dollar; "Annual Report of Director of Veterinary Department of the Board of Agriculture," presented by Professor Brown.

On the motion of Mr. WRAGG, seconded by Mr. HEDLEY, a vote of thanks was passed to the several donors.

Appointment of Examiners.

A letter from Mr. Trigger was read asking whether it was necessary for gentlemen seeking appointment or reappointment to make personal application to the Council, or was it sufficient if gentlemen were duly nominated. Also whether the nomination must be seconded.

The PRESIDENT said it was necessary for gentlemen to be nominated, but no seconder was required. Any member of the profession might nominate an examiner. If a member of the profession chose to nominate himself he could do so. The nomination must be fourteen clear days before the election.

The SECRETARY read a letter from the Camden Town School asking the Council, in view of the Governors having decided to reintroduce the summer session, to arrange that the summer examination should be held in the early part of July instead of in the middle of May as heretofore.

General Sir F. FITZWYGRAM said this was a question which entirely concerned the College, and he thought the Council would do wisely in forwarding the wishes of the Governors of its largest teaching school. It had been felt desirable to have a summer session, and it was obviously desirable that the examination should be held at the conclusion of the course.

Mr. TRIGGER submitted that no sufficient reason was shown for the suggested alteration.

Mr. HUNTING said the letter in terms told the Council what they were to do to suit their arrangements to those of the schools. No single reason had been given for the alteration, and there were a number of reasons against it. First of all they were asked to upset the arrangements of their examining body to suit the convenience of one school, whilst there were two or three other schools which did not ask for any alteration. Good reasons should be given for taking such a step as that. Why should there be a summer session? Was it entirely a matter for the school? The teaching of the schools was an extremely important matter for the profession, and the Council must regulate the examinations so that they might take place at the best possible time for the students, viz., at the end of a course of teaching. If the lectures were carried on as at present in the winter, and there was no alteration of the winter session, it came to this, that a student would have three months' practical chemistry in the summer with a little botany, and what they were asked to call practical tuition. It would enable the students to forget a good

deal of what they had learnt, and would send them to the examinations in July a good deal worse students than they were at present. There were some things that could not be taught at the College, but could only be seen in the country in practice, and the only time in the year in which these things could be seen was the summer. The synopsis of the summer course seemed to be arranged to get the students at College for three months. The use of the word "practical" was delusive. Other schools had not found out the value of this practical work in the summer, nor had any veterinary surgeon. It had come upon the Council as a total surprise, and not one single reason was given for it.

Professor WALLEY said that in Scotland the summer session was found to be a great nuisance, and to have no real practical value. One great reason for getting rid of the summer session was to enable students to get away into the country and see practice there. In the case of written examinations it was very important that they should be carried on simultaneously, but this could not be done if the examinations were in May in the country and in July in London.

General Sir F. FITZWYGRAM replied that a summer session was entirely a question for the schools.

Mr. HUNTING said he should be very sorry to interfere with the schools if he thought that the teaching was arranged by the teaching staff. If he were assured that the whole of the teaching staff at Camden Town approved this suggestion he would withdraw his objection, but he had reason to believe that not one of the staff held with the Governors.

The PRESIDENT said the Council of course had nothing to do with the internal government of the schools, but it was for them to say whether they would examine students in July as asked.

Mr. TRIGGER moved—"That the Royal Veterinary College be informed that, in view of the introduction of written examinations, this Council cannot see their way to make alterations that would interfere with the uniformity of the examinations at the various schools."

Mr. NISBET seconded the motion.

Mr. HUNTING moved as an amendment—"That this Council, whilst desiring to make their arrangements in accordance with the requirements of the schools, cannot see their way at present to make special alterations for the examinations of any single school."

The amendment was not seconded.

The resolution, as proposed by Mr. Trigger and seconded by Mr. Nisbet, was then agreed to.

Correspondence.

Read letter received from Mr. Wilkinson, of Bath, enclosing copy of letter to the Postmaster-General in relation to the ill-usage of horses in postal vans.

It was ordered that the letter should lie on the table, and that the Secretary should write saying it was a case for the Society for Prevention of Cruelty to Animals to take up rather than the Council of this College.

Read letter from British Institute of Preventive Medicine, calling attention to the proposed National Institution for the study of Bacteriology, to be called the British Institute for Preventive Medicine, and expressing the hope that the Council might see fit to grant a donation to the fund being raised to build and endow the Institute.

Also letter from the National Veterinary Association, enclosing a circular sent to the secretaries of the several veterinary associations, and asking whether, in the event of the combination therein advocated being secured, the Royal College of Veterinary Surgeons would be willing to take up the matter

with the British Institute of Preventive Medicine, with the view of securing another member of the profession on the Council of the Institute.

Professor WALLEY asked whether the Council could afford to entertain the suggestion.

Mr. WRAGG said the Council of the National Veterinary Association thought that if the subscribing associations would send their subscriptions through the National Veterinary Association, who would send them on to the Council of the College to be forwarded with whatever sum that Council might add, it would give the profession a greater advantage than if the subscriptions were sent in separate amounts from the different associations.

Mr. EDGAR said it did not seem that the profession was credited with the position it should hold in the governing body of the Preventive Institute; only one veterinary surgeon was on the Council, whereas the medical profession had a considerable number of representatives.

Mr. WRAGG thought, from the feeling of the Association, that they would not subscribe at all unless the veterinary profession were represented on the Council.

Professor PENBERTHY, as the original proposer of the establishment of this Institute, said that, from what he knew of its present Council, there would not be the slightest objection to have the veterinary profession properly represented, and to do that they should have at least two members on the Council.

Mr. EDGAR proposed that a letter be sent to the Secretary of the Institute, stating the Council of the Royal College agreed with the suggestions contained in their letter, but asking that two more members of the veterinary profession might be added to the Council of the Institute; also that a letter be written to the Secretary of the National Veterinary Association enclosing copy of the letter sent to the Institute, and adding that, in the event of the National Association subscribing, they would be pleased to act with the other associations.

Mr. HEDLEY seconded the motion, which was agreed to.

Finance Committee.

The report of the Finance Committee was read. It stated that when the liabilities (£247 15*s.* 8*d.*) were paid the balance at the bankers would be £627 2*s.* 11*d.*, which includes the sum of £311 16*s.* 3*d.* placed to the credit of the Steel Memorial Fund. It called the attention of the Council to the increased expenses of the examinations, and recommended that an inquiry be held with a view to their rearrangement. A sub-committee in its report dealt with the salaries of the Secretary and Clerk, recommending that all allowances be stopped, and that the Secretary be paid a yearly salary not exceeding £300; and that a clerk be appointed at a salary of £75. It arranged that the office hours of the Secretary were to be from 10 till 4, and of the Clerk from 9 till 5; on Saturdays to close at 2.

On the motion of Mr. WRAGG, seconded by Professor WALLEY, the report was agreed to; and the Treasurer was empowered to draw cheques to the amount of £247 15*s.* 8*d.* to discharge liabilities. The report of the committee recommending that the moneys to the credit of the Steel Memorial Fund be invested in Consols as a separate fund was also agreed to.

Registration Committee.

The Report of the Registration Committee was read. It recommended certain prosecutions for offences under the 16th and 17th sections, and stated that the committee had received undertakings to discontinue offences in several instances. Cautionary notices had been directed in other cases.

On the motion of Professor PENBERTHY, seconded by Mr. FRASER, it was

agreed that the Solicitor should be empowered to prosecute in the cases mentioned, and that the seal of the College be affixed to the prosecutions.

On the motion of Professor WALLEY, seconded by Mr. MASON, the Report of the Committee was received and adopted.

Reports from the Court of Examiners.

The SECRETARY reported that at the Royal Veterinary College Pass Examination 24 students passed and 18 were rejected. For the Second Examination 19 passed and 8 were rejected. For the "A" Examination 16 passed and 18 were rejected.

Mr. HUNTING asked if the Report on the Oral Examinations was signed by the Chairman.

The PRESIDENT said it was not.

Mr. HUNTING said this was the third time he had had to complain that this had not been done.

The SECRETARY said there was no chairman to the Court of Examiners; there was a separate chairman to each section.

The PRESIDENT said the only report received from the Examiners was from the chairman of the practical section. The only other report was that drawn up by the Secretary.

Mr. HUNTING moved—"That the Secretary be requested to write to the chairman of each section of the Examiners, asking them to forward their report, and to complain that they had not carried out the requirements of the Council."

Mr. MASON seconded.

The resolution was agreed to.

Captain RAYMOND said the name of Mr. Wragg, who was an officer of the Council, was on the list of Examiners. Was that an error or not? It should be thoroughly understood when they got Charters that strictly laid down the fact that members of the Council were not to act as Examiners, that it would be as well to carry that out.

Mr. WRAGG explained that when he was asked to take the place of an Examiner who was unavoidably absent for a few hours, owing to having to attend a case in Court on subpœna, it never entered his mind that he was doing anything illegal. He certainly should not have acted had he remembered that he was doing anything not strictly in accordance with the Charter.

The SECRETARY reported the following results of the Scotch Examinations:—

"*A*" *Examination.*—New College, 14 passed and 6 rejected; Dick, 15 passed and 15 rejected; Glasgow, 9 passed and 4 rejected.

"*B*" *Examination.*—New, 12 passed and 7 rejected; Dick, 16 passed and 5 rejected; Glasgow, 8 passed and 3 rejected.

"*C*" *Oral Examination.*—New, 13 passed and 7 rejected; Dick, 22 passed and 10 rejected; Glasgow, 8 passed and 10 rejected.

"*C*" *Practical Examination.*—New, 11 passed and 11 rejected; Dick, 15 passed and 13 rejected; Glasgow, 14 passed and 4 rejected.

Mr. HUNTING asked if this was a report from the Secretary or from the Examiners.

The PRESIDENT.—From the Secretary only.

Mr. TRIGGER moved—"That the report be received and adopted, but that attention having been drawn to the fact that the Secretary to the Scotch Board of Examiners has acted as Examiner, this Council does not consider that a desirable proceeding; and that the question of a reserve of Examiners be referred to the Committee now sitting on Examination questions."

Mr. MASON seconded the motion, which was agreed to.

Read letter from Mr. Rutherford on the subject of his remuneration.

Resolved that this letter be referred to the committee *re* Examinations, &c.

Read Report from the Examiners for the Fellowship Degree, from which it appeared that eight gentlemen presented themselves for examination on the 27th October last, all of whom passed.

Examination Committee.

On the motion of Mr. MASON, seconded by Mr. MERRICK, the following Report was received and adopted:

Regulations for Written Examinations.

Examinations to commence daily at 10 a.m.

Four questions on each subject, two to be answered.

Time not to exceed one hour in each subject.

Answers to be written on one side of paper only.

Each question to be answered on separate sheets.

Each paper to be signed with a number only, the number to be given by Secretary on candidates entering the room.

Passage of paper, reference to books or documents, talking or copying, will entail immediate dismissal from examination.

Regulations for Examiners.

All Examinations to commence daily at 10 a.m.

Each Examiner to set two questions, the answers to which he shall read, mark, and return to Secretary as soon as possible.

Remuneration.

That the question of remuneration to the Examiners for the Oral, Practical, and Written Examinations be submitted to a small sub-committee of the Finance Committee, when the following were appointed: Messrs. Hunting, Wragg, Professor Penberthy, and Captain Raymond.

Trustees.

On the motion of Mr. MASON, seconded by Professor WALLEY, Mr. Wragg was elected a Trustee in the room of the late Mr. Cartledge.

The SECRETARY read the *Obituary List.*

The Fellowship Examinations.

Mr. HUNTING moved—"That a committee be appointed to consider the Fellowship Examination, and to report to the Council." He said he based his proposal for an inquiry upon the fact that there was throughout the profession a very great diversity of opinion about the Examinations. For the sake of the Fellowship that diversity of opinion ought to be cleared up, and it should be seen whether the Examination was such as to select from among their number the best men for the higher degree. He believed that could only be done by the appointment of a committee to examine into the matter and report to the Council. That committee could have before it the printed questions which had been set for years, and the Secretary could supply the answers that had been sent in. In fact, the committee could have all the information necessary to form a correct opinion.

Mr. EDGAR seconded the motion.

Captain RAYMOND said it would not be necessary to go into all the Examination papers of the Fellows. If the committee confined its attention to papers sent in by Fellows on the Council, that would be a very fair sample of the way in which the Examinations were conducted.

The motion was agreed to.

Mr. Edgar, Captain Raymond, Professor Penberthy, and Mr. Hunting were nominated to form the committee.

Agreed to.

Mr. HUNTING gave notice of a resolution for the general amendment of the Bye-Laws, so as to make them in accordance with the alterations in the Examinations.

SPECIAL MEETING.

Professor WALLEY (for Sir F. Fitzwygram) moved—"That the President be requested to arrange the agenda (after the minutes have been read and signed) in such order as may enable the more important business to be transacted earlier than is at present the case."

The motion was not seconded.

A Veterinary Pharmacopœia.

Mr. DONALD moved—"That the Council do prepare and issue a Veterinary Pharmacopœia."

The PRESIDENT said, after a great deal of consideration, he had come to the conclusion that the College possessed no powers to carry out any such work. He was, therefore, afraid they could not entertain the question.

Preliminary Examinations.

Mr. TRIGGER moved — "1. That the Examination Sub-Committee be instructed to see that the Bye-laws relating to Preliminary Examinations be carried out. 2. That certificates admitting students to any of the veterinary colleges, without educational examination, be lodged with the Secretary of the Royal College of Veterinary Surgeons, as shall also all papers, answers, and marks of students who submit themselves for examination."

The PRESIDENT said Clause 1 was simply that the Bye-laws be carried out. They assumed that the Bye-laws were carried out by the Council. It could hardly be imagined otherwise.

Captain RAYMOND said, as a matter of fact, they knew perfectly well that the Bye-laws relating to Preliminary Examinations were not carried out. He seconded the motion.

Mr. TRIGGER said he would withdraw the first clause.

Captain RAYMOND objected to its withdrawal.

The PRESIDENT said, for the future there would be no Matriculation Examinations conducted by the College at all. It was not, therefore, necessary to appoint a Sub-Committee to supervise a thing that did not exist.

Mr. HUNTING proposed that the first clause be struck out.

Colonel OLIPHANT seconded the motion, which was carried.

Clause 2 of the resolution was then agreed to.

Visitation of Members of Council to Examinations.

Mr. HEDLEY moved—"That one or more members of Council be delegated in rotation to attend each Professional Examination."

Mr. MASON seconded.

Mr. T. FRASER said it was the duty of the Council to see that the examination was properly carried out, and certain members should be deputed to attend and should be held responsible.

Mr. DONALD supported the resolution, which was agreed to.

Mr. HEDLEY moved—"That the Secretary be instructed to keep a rotation list for the purpose."

Mr. MASON seconded the motion, which was agreed to.

Mr. HEDLEY moved—"That the necessary expenses of the delegate or delegates be defrayed by the funds."

Mr. MASON seconded.

Mr. TRIGGER said at the present moment they were considering how they could possibly cut down the examination expenses, and now they were practically appointing two more examiners. He would move that no expenses whatever should be paid.

Mr. HUNTING said if he had the misfortune to be sent to Edinburgh on this rotation list, he should certainly object to pay his own expenses. They only asked to be paid their railway expenses.

Mr. TRIGGER moved that the expenses of the examinations should not be increased.

Mr. WRAGG seconded the amendment. They could not afford to increase their examination expenses.

Mr. HEDLEY said he would confine his resolution to payment of "travelling expenses."

Mr. MASON thought the payment of railway or boat fares a very small item in comparison with the benefit that would accrue from members attending examinations. The money would be well spent.

The PRESIDENT :—Will you substitute for the words "necessary expenses" the words "railway fare?"

Mr. HEDLEY said that would not cover the expenses of members coming from Ireland. Boat expenses should be included.

The PRESIDENT :—Then use the words "travelling expenses."

The amendment was put to the Council and negatived.

The motion "That the travelling expenses of the delegate or delegates be defrayed by the funds," was then agreed to.

The Veterinary Pharmacopœia.

The PRESIDENT said Mr. Donald had drawn his attention to a section of the Charter of 1844 which allowed the Council to "purchase, receive, and possess" certain properties, and that they might possess "goods and chattels or other personal property whatsoever." Mr. Donald contended that a pharmacopœia would be a "property" of the College, and that therefore under that clause he had the right to bring forward his resolution. He would point out that although a pharmacopœia, if it was already prepared and was in the hands of the Council, would possibly be a "property," whatever the value might be, yet the very fact that it had to be prepared and issued by the Council rather put him out of court.

Mr. DONALD asked to alter the terms of his resolution so as to bring it in accordance with the Charter. He proposed to make it "purchase and possess," and he thought he could prove that it would be a source of revenue to the College.

The PRESIDENT said Mr. Donald could bring forward his motion.

Mr. DONALD them moved—"That the Council do purchase and possess a Veterinary Pharmacopœia." He pointed out that the Royal College occupied the unique position of being the only corporate body granting licences to practise medicine who did not have a recognised pharmacopœia.

Mr. FRASER seconded the motion.

Mr. HUNTING moved as an amendment—"That a committee be appointed to consider the advisability of preparing or adopting a Veterinary Pharmacopœia, and that they report to the Council.

The amendment was put and carried. It was then put as a substantive motion, and carried.

The committee was appointed to consist of Professor Walley, Mr. Hunting, Mr. Donald, Mr. Fraser, Mr. Wragg, and Captain Raymond.

Captain RAYMOND moved that the Solicitor be requested to continue to date

his report of the resolutions of Council now in force, and that such amended report be included in the forthcoming Register.

Mr. HEDLEY seconded the motion, which was agreed to.

Captain RAYMOND moved that the Four Years' Scheme be also printed in the new Register.

Mr. HEDLEY seconded the motion, which was agreed to.

FELLOWSHIP DEGREE.

An examination for the above degree was held in London, on January 26th, 1893, when the following gentlemen were admitted Fellows of the Royal College of Veterinary Surgeons :—

Veterinary-Captain F. Smith
Veterinary-Lieutenant H. M. Maxwell
E. C. Winter, Limerick
Veterinary-Captain S. Longhurst
E. S. Gubbin, Glossop, Derbyshire
J. McKenna, Huddersfield
F. Leigh, Bristol
J. Armstrong, Penrith, Cumberland
Thos. Aubrey, Bath

ARTHUR W. HILL, *Secretary.*

NATIONAL VETERINARY ASSOCIATION.

(*Continued from Vol. XXXV., page* 455.)

THE discussion of Professor Dewar's paper on the "Castration of the Domestic Animals" (which has already appeared in the VETERINARY JOURNAL) was opened by Mr. Thompson, of Aspatria, who said :

I am pleased to be present on this occasion. I have been at a great many meetings of this Association, and I am delighted to see so many present, particularly those from the south, in support of our worthy and excellent President, Professor McCall. As a rule—I think I am speaking correctly—the subjects principally brought before this Association have been of a very scientific character, sometimes so scientific that men like myself, trained 30 or 40 years ago, would not be able to discuss them, To-day I have the honour of opening a debate upon what I shall call a purely practical question—never mind how financial it may be according to Mr. Hunting's way of putting it, it is purely a practical paper. It is a well-known fact that in a great many counties of England there are men who go about castrating both male and female animals with great success, without the least training as veterinary surgeons, and they make a good living out of it. They know nothing about anatomy or physiology, yet they perform operations on female animals with great success, and also with benefit to themselves ; and the same holds good with regard to the males. I say, therefore, the subject is purely a practical one. It is, in fact, one of imitation. I am afraid that although many of us are both scientists and practical men, there is a good deal of imitation practised. When anyone discovers a special fact with regard to a certain disease he gives it to the world. Where is our science ? It is a matter of practical knowledge. We all go to a particular drug and we try it ; for instance, we take the hydrate of chloral for the cure of milk fever. It reminds one of an old story which, if you have no objection, I will repeat. A doctor once went with his assistant to see a patient. "How are you ?" asked the doctor. "Oh ! I am very ill," said the patient. "Well," said the doctor, "you are likely to be ill, you have been eating oysters." "Yes, I did eat one or two, but I thought they would not harm me."

When they left, the assistant said to the doctor, "How did you know the man had been eating oysters?" "From the symptoms, from the symptoms, my boy." "What symptoms were there to show that the man had been eating oysters?" "Why," said the doctor, "I saw the shells under the bed." The next day the assistant went himself to see the patient. "How do you feel?" said he. "Very ill," said the patient. "What is the matter?" "Very poorly." "Ah, you are likely to be poorly, you have been eating a horse." "Eating what?" "Eating a horse." And so persistent was the man about it that the relatives thought he had gone mad, and sent for the doctor. The doctor came, and said to the assistant, "What on earth possessed you to say that the man had been eating a horse?" "The symptoms, sir, the symptoms," said the assistant. "What symptoms?" said the doctor. "Why, the saddle and bridle under the bed." I think we are like the assistant and the doctor—we all live by imitation; the doctor saw the oyster shells and the assistant saw the saddle and the bridle.

Now, turning to the subject, if I had been called upon to write a paper on this matter, I should have used almost exactly the very words that have been used by Professor Dewar. I think there must have been some theosophic microbes flying about when the writer was committing his words to paper; those microbes or germs must have found their way into the convolutions of my brain, because the paper expresses my opinions from beginning to end. I have, therefore, nothing to take from it or to add to it. With regard to castrating pigs, we sometimes do it. We have had a great deal of hernia in pigs; as Professor Dewar says, we take away the testicles and stitch up the wound. Professor Dewar then goes on to lambs. I must say that I have not castrated any lambs. I once saw a professional man castrate 23. He opened the scrotum with a knife and cut off the testicle, and 17 of those animals died from septicæmia. Whether his hands had been filthy, or whether the knife was not right I cannot tell. I saw the man operate myself, and I said, "I will never castrate a lamb." I have seen assistants do it in the same way as laid down by Professor Dewar, by opening the scrotum and getting hold of the testicle in the way mention by Professor Dewar, with the teeth, and drawing them out. I have frequently castrated rams two or three years old. I open the scrotum with the actual cautery and cut off the testicle. I cast the ram on a stool and sit on one corner when I do the operation. I have done 50 or 60 at a place, and have been very successful. I do not remember losing one with the actual cautery. By cutting off with the knife some septic material gets round about the scrotum and sometimes proves fatal. With reference to calves, farmers generally do the operation themselves in our district. It is an operation of a purely practical character. They remove the testicle in the ordinary fashion, and they put in a small piece of butter and salt, which, I think, is a very poor substitute. The operation is performed on stirks 12 months old —we have had many in our district. The cattle are kept there till they are from nine to 15 months old to see what they are going to turn out. Then we castrate them, standing, as mentioned by Professor Dewar. We get hold of the testicle behind, make a good circular incision, a good back opening, pull out the testicles, divide the non-vascular portion with a knife, and cut the testicles off with a hot iron. I have tried torsion, but I did not like it, and it caused a great deal of bleeding. Perhaps I had not seen anyone to imitate the torsion business. The action of the cautery, however, answered very well. When there was bleeding I caught hold of the scrotum and put a piece of cord round the top.

The principal portion of the paper I think is that relating to horses. My mode of operating has been with the actual cautery. I cast the animal with side lines, with ropes, and put him on his back. I always wash the sheath well. I put a little antiseptic liniment into the sheath, and also on the

scrotum. I open the scrotum well and make a good free opening; then I take out the testicle and put it into the clam, divide the non-vascular portion with a hot iron, and set it at liberty. I have no cremaster muscle pulling at me. I cut it off with a hot iron and let it sear nicely through. I have been very successful with the operation. During the last 32 years I have opened something like 1,400 or 1,500 colts, and have only lost two. One was from hæmorrhage. I operated at three o'clock in the afternoon, and at ten o'clock in the evening the animal was all right, but in the next morning it died from hæmorrhage. It died before I got to it. That was the only one I lost from hæmorrhage. I have seen them bleed a little after the operation, and the best thing I found for stopping the hæmorrhage was to put a halter on and walk the animal backwards and forwards for ten minutes. I never saw that fail in stopping the bleeding except once, and then I introduced my hand and got hold of the cord and pulled it down and tied a piece of thread round it. That is the first ligature I ever put on in the castration of any animal. When there is clotted blood in the scrotum of calves, stirks, or horses it is dangerous, and ought to be cleaned out soon. I have only had two cases of scirrhus cords. I operated twelve months afterwards. I cut them out and they did well. I have not had a case of tetanus supervening from the operation of cautery, nor have I had septicæmia. In another case I had a two-year-old that died; the animal had hernia and was very weak, but I was not aware of it. Immediately I cut him he got on his legs, and his bowels came rolling out. I got a bed sheet, doubled it in a three corner way, and tied it round the body and put the bowels into the sheet, and tied the other end up by his tail. I then got the ropes on again, and when we got him down there was as much of the bowels outside as in. I returned it and put a wooden clam on. The horse died from peritonitis. Those were the only two cases of death after the actual cautery. I have tried the ecraseur and it answers well, but we have sometimes hæmorrhage, and I have not followed it up as I should have done but for the hæmorrhage. Like a man going over an old bridge, I stick to the actual cautery. I do not open the scrotum with a cautery, but many do. Non-qualified men open it with a hot iron, and that is the secret of their success. It not only seals the edge of the wound but there is no raw surface presented to the atmosphere. It acts as a sort of shield, and prevents union by first intention. That, I believe, is the reason for the success of the non-qualified men with the hot iron. I have seen wooden clams put on, but I think if there is one thing more barbarous than another it is for a qualified man to open the scrotum and put a pair of wooden clams on to the delicate, raw surface of the spermatic cord and tie it and leave it dangling with the cremaster muscle pulling at it for several hours. The operation is not a nice one to begin with, and if we can perform it with less pain to the animal the better.

If there is much discussion on this paper, I think it will turn principally on the methods of operating upon horses. I never operate upon a horse standing. All the success I have had has been with casting with ropes. I have done three in thirty-two minutes, that is about one in ten minutes, and I think that is quick enough. I have done it over and over again. Younger members of the profession are now doing it standing, but they should look out for themselves. If the owner has any respect for his horse I have a respect for my wife. The thing comes to this—Which is the safest mode to secure the animal? and which is the best mode of performing the operation—the most humane, the one most successful to yourself, to your patient and your client? I think that is exactly the point on which the discussion will turn. I have never used chloroform for castration, but I may mention that a member of this association, Mr. Roberts, formerly of Kendal and now of Tunbridge Wells, read with Mr. Williams a combined paper on the use of chloroform. That gentleman said he only put a halter on the horse's head, and that the horse

went down under the chloroform without casting. I think honour should be given where honour is due, but I think that Mr. Roberts has been entirely overlooked in the chloroform bag business. Old Mr. Carlisle saw Mr. Roberts chloroform the first horse with his ordinary mouth bag. Professor Williams was present on the occasion. Mr. Roberts has been ignored altogether on account of Mr. Carlisle making a little improvement in the bag.

The first thing to secure success in castration is cleanliness: the instruments should be perfectly clean and the hands should be perfectly clean. Like Professor Dewar, I firmly believe in removing all the dirty, nasty filth. As for antiseptic mixtures anything will do, but washing the hands in chloride of mercury solution, if it is done several times a day, I am afraid would cause the hands to suffer before a few days were over. My mixture is a very simple one. A drachm of acetate of copper, eight ounces of linseed oil, and two drachms of oil of Eucalyptus. I smear that on the hands, on the knife, on the clam, and on the scrotum before I commence. Either in the bull or in the colt I always open the scrotum with Symes's abscess knife, which I think is the best castrating knife of the lot. It cuts at one sweep, so that you cannot miss. I have always used a Symes's abscess lancet, and have never had to cut twice. I know that a good many men operate standing in Scotland, and I should like to hear some of those gentlemen make some remarks upon the subject. I forgot to mention that I never operated on rigs, but I saw Captain Russell perform the operation. I have seen his mode of casting, and I must say that it seems to be complicated. Like the late Robert Simpson, he has two strings to his bow. I have also seen my friend Mr. Donald perform the operation. There is an account of his method well worth reading in Professor McFadyean's "Comparative Pathology," with two diagrams. The great thing in castrating for rigs is to get the legs properly down, the fetlocks under, the horse properly tied and in a good position. With reference to Professor Dewar's saying that he had operated on one, he seems to have taken a blunt seton down the inguinal canal, but I should have thought that was a dangerous proceeding. Again, he says that when the testicle is in the inguinal canal, or just a little exterior to it, you cannot call them rigs. Then what are they? They are not geldings. When the testicle is partly in the abdominal cavity and partly in the inguinal canal I should call that a rig. If it was partly external in the abdominal ring and partly in the inguinal canal I should call that a rig. I call it a rig as long as the testicles are not in the bottom of the scrotum. It appears to me that a testicle of any size could not be held in the inguinal canal. It might be the case if the testicle was a small one and the canal very large. With reference to the operation for hernia, I should use a clam and put it over all the integument, allowing it to slough off. Mr. Donald is present, and perhaps he will give us his views on the castration of rigs. I think great credit is due to him, seeing that he has performed the operation, and has been the first to put his ideas on paper, and to give us a drawing showing how he did it.

Prof. PRITCHARD: I should like to make a few remarks upon the subject of castration. With regard to securing the animal during the operation, nearly every one seems to have a pet way of casting. There are many practitioners who castrate many animals, and who are in the habit of simply casting the horse in the ordinary way, and drawing one hind leg up towards the back or shoulder. I have seen this done, and I have done it myself with the greatest possible ease. I know it has been said in reply: "Yes; but how are you going to get the ordinary hobbles upon a wild colt?" Let me tell you that that is not a difficult matter. The way to proceed is to put the twitch on the wild colt's nose, and the probability is that as it is the first time he has been introduced to the instrument, he is so astonished and cowed that putting the hobbles on afterwards is a matter of great simplicity. As a rule, I do not

secure the horse in this way. I adopt the plan that is carried out by Mr. Miles, who is probably well known, at any rate by name, to all of you. Casting the animal is ordinarily done by the ordinary castrating rope, throwing him down in that way; but instead of drawing the hind leg up to the shoulder, as is usually done with the ordinary rope, the hind leg is allowed to be let out for three or four feet, a half-hitch put round the fetlock, and the rope passed under to the back, drawing the hind fetlock back on the hip, and fixing the rope with another half-hitch or two on the same fetlock, turning the animal over, and fixing the other leg in the same way. Those who have thrown horses with the ordinary castrating rope have all experienced the fact that, unless a very good man is at the head of the colt, he will push the loop round the neck, over his ears, and soon liberate himself. I will mention a case that happened to me many years ago at the College. I cast a two-year-old colt, and, in spite of the exertions of the man at the head, in about ten seconds after he was down he put the collar over his ears, and up he got. I then placed a surcingle round the back, and I fixed the top of the collar with a rope, and with a surcingle cast him again. In less time then it takes to tell you, he was out of the rope and the surcingle too. He pushed the whole lot over the top of his head. Not to be done, I placed a crupper upon him, and cast the horse and trussed him. After I had got the first testicle out he made violent struggles—no doubt encouraged by his previous successes—and broke his thigh. I am told that this may be avoided without any surcingle at all. Instead of pulling with main force as soon as the colt is down, and attempting to bring the feet up as high as possible, if the colt be allowed to have his hind legs somewhat in the way I have described, he cannot possibly push the collar over his head. I have tried it over and over again; and, if you have an ordinary man at the colt's head, the colt will have no chance whatever.

But, passing from that, there is a sentence in the paper with which I thoroughly disagree: "The scrotum is still sometimes opened by a hot, sharp-edged firing-iron, but we are glad to think that this painful and barbarous method is gradually being given up, as no advantage is to be gained by it." I disagree with every word of that. In the first place, I should like to know whether it is more barbarous than cutting the scrotum with a knife. The one is done as quickly as the other, if it is done properly. The author uses the expression: "a sharp-edged firing-iron." I should certainly use that instrument myself, provided I opened the scrotum with a hot iron. I claim, first, that there is no more pain inflicted in that way than by opening the scrotum with a knife; and I claim, secondly, that there is a very considerable advantage gained. My friend who opened the discussion on the paper has pointed out one—indeed, more than one. He says it seals the edges of the skin, and renders less likely the untoward results of microbes. He has also mentioned another advantage of some importance, namely, that the wound does not heal by first intention or by the adhesive process. Further on in the paper we read of abscesses forming. I have had considerable experience in the castration of horses of all ages, more particularly of horses four, five, or six, or ten or eleven years old; and I have never had but one case of formation of an abscess, and that was the result of a foreign body that remained in the scrotum after the healing, or partial healing, of the external wound. With your permission I will narrate the case, as it is a rather interesting one. The horse belonged to the late Earl of Dudley, and it was fourteen years of age. It was ruptured on the right side, but not to any great extent. On the right side was a diseased testicle, which, after being removed, weighed between three pounds and four pounds. The horse was a remarkably nice animal to drive, and his Lordship had determined to have the diseased testicle taken out, as it was very unsightly. I cast the horse; and I can assure you that his spermatic cord was as thick as my wrist, and the artery as large as a moderate sized goose-quill. I attempted

to arrest the hæmorrhage by searing, but that failed. After searing the end of the cord considerably, I failed in bringing about the closing of the artery, and I eventually ligatured it. On the other side, I did not interfere. The horse did remarkably well for about three weeks, and never had an untoward symptom; but then he began to swell, and there was an abscess in the scrotum. I cast the horse again, and on opening the scrotum, out rushed a pint or more of pus, and floating on this pus the eschar, from the end of the cord. Now, if that external opening had been made with a hot iron instead of a knife, it would have remained open sufficiently long for the eschar to have escaped, and no abscess would have taken place. I am willing to admit that in some cases it may be due to some little organism, giving rise to the formation of these abscesses; but I think it is far more frequently due to the scrotum closing prior to the healing of the extremity of the cord. With regard to searing, which I do not see mentioned in this paper, I do not think I have read of it anywhere or heard anybody mention it, but it is a point of considerable importance. We hear a good deal, with which I thoroughly agree, about the temperature of the iron used in searing the end of the cord—namely, a black heat. I agree with that, but beyond that there is a point to be gained in this operation of tue actual cautery. Instead of searing the cut-end of the vessel and relying upon the eschar you produce there to prevent hæmorrhage, you do not sear it there so particularly as you sear the side of it, and then you will never have any hæmorrhage afterwards. I have heard it mentioned to-day that an animal after being operated upon has been left at night, no hæmorrhage having taken place, and that in the morning it was found that he had bled to death, or to such an extent as to be beyond recovery. Now, if you will sear the end of the artery—or, rather, sear the artery for half an inch on its side—if, to use the familiar phrase, you will also cook it, I do not think there is a ghost of a chance of hæmorrhage subsequently taking place. With regard to the clam—I mean the ordinary iron clam—I remember that when I first saw a horse castrated it struck me as a very barbarous treatment. It was squeezed together with a force which was absolutely unnecessary, and fixed with a rack at the end of it. For many years I have discarded that when operating with the actual cautery. There is an instrument made of boxwood, without any rack, of this description, much lighter, much the same shape as the ordinary iron one, and it is far more easily handled, and answers every purpose. To my mind it does not inflict injury upon that part of the cord which has to be left. I was brought up to castrate horses with a ligature. The operation was formed in this way: The scrotum was opened with a sharp, hot iron, the testicle was taken, and the posterior part of the cord cut through with the same iron. You then scrape the side of the cord until the blood is started, then the vessel is seized, and a common thread ligature placed upon it. I never saw a case do badly in that way. In every instance the ligature was allowed to remain outside the scrotum. Although this proceeding is condemned in the paper on account of the facility afforded for the interference of micro-organisms, I must say I differ from that. I think there is an advantage in leaving the thread outside, because in some instances, either from the ligature not being sufficiently tight, or from some other cause, it does not separate readily. I can understand the possibility of the scrotum healing before it passes out, and then it would act as a foreign body, and set up the formation of an abscess.

One word as to the ecraseur. I took to this plan of operating when Miles came to this country. I operated upon a number of cases, and I never had any subsequent hæmorrhage. But, unfortunately, one day I stupidly endeavoured to do an operation with this instrument where I had no right to do so, and I broke the chain. I tried many chains afterwards, but it was not until I wrote to America and got one from Mr. Miles that I succeeded.

What there was in it I do not know, bnt there is some secret belonging to it If you find that the animals bleed in using the instrument, if you send to Mr. Miles for one of his chains the thing is remedied.

With regard to scirrhus cord, there is one thing that I have made out to my satisfaction in performing this operation. Where the cord is enlarged very high up and beyond any chance of your reaching it, you will find that there is a sinus near the centre of it. It is not necessary that you should remove every portion of the cord that has this sinus in it. If you remove part of it such an amount of inflammation is set up in the extremity as to destroy the remainder of the sinus. With regard to cutting standing, I agree with my friend who opened the discussion, in seeing no advantage in it. If the animal is cast properly the risk of injury is very slight indeed. However clever the man may be who operates while the horse is standing, he runs a risk, as our friend put it, of making his wife a widow. I never use chloroform for castration. I have done so, but I have ceased to do it. At the college the late Professor Spooner was very fond of using chloroform for castration, but I may say that I have never seen horses so well after chloroform as without it, and, therefore, I discarded it. One word with regard to rigs. I agree that a rig is an animal with a testicle in the abdomen. I regard an animal in which the testicle cannot be detected as a rig. He has all the faults and none of the advantages of the stallion. The greatest castrator of rigs that I know confessed to me that nine times out of ten the missing testicle is in the inguinal canal; and he told me more than that. He said that when it is not in the inguinal canal you may succeed in operating upon the horse, but it is a ten times more difficult operation to perform, and places the animal's life ten times more in jeopardy.

Professor WILLIAMS: Allow me, in the first place, to congratulate Professor Dewar upon his election as a teacher, and upon his having written so valuable and practical a paper, the discussion of which is within the capacity of every one present. With reference to casting the horse before the operation, in all young animals I use a rope. The difficulty pointed out by Professor Pritchard of the rope getting over the colt's head is easily overcome. He says, "The loop is put over the head and down to the shoulders, the knot resting over the front of the chest." Put it the reverse way; let the knot rest upon the wither; there is no horse in the world that can get the loop over his head. The more you pull the rope the tighter it goes round the neck. There is no difficulty about. I had some difficulty in my young days, but I overcame it by reversing the position of the knot. I have had no great experience of the ecraseur. The chain I obtained was not an American one. I ws not aware that Mr. Miles sold the magic chain until the present time. I may write to my old friend and ask him to send me one, and may revert to the operation by the ecraseur; but for many years I have performed the operation by torsion. I do not, however, think that torsion has any great advantage over castration by actual cautery, and if I were in country practice and had to do with a lot of young animals, I believe I should revert to the actual cautery. I should do the operation entirely by the actual cautery. I should open the scrotum, for the reason given by Mr. Thompson, and also sever the cord by the cautery. The great mistake in using the cautery is having it too cold. I agree with Professor Pritchard that it should be almost at white heat. If you use it at black heat it sticks to the end of the cord; but if it is hot enough it chars the part and you can separate it from the end of the cord without any difficulty. This was the great argument as to whether the cautery in the ordinary operation of firing should be of a whitish or a dullish red heat. When we were students we argued thus—that the hotter the iron was, within reason, the better; that by charring the part a tissue formed a non-conductor of heat between the cautery itself and the cord. Immediately the

tissue was charred it turned into charcoal, which was a non-conductor of heat, and the operation of firing was less painful than when the iron was cold. As a matter of fact the iron can be a great deal too cold: a dull red heat is not enough, it must approach white heat. Cleanliness is a most important factor in the success of the operation. The knife is sometimes dipped into a solution of corrosive sublimate. I use a solution of carbolic acid, putting it on the instrument, cleaning the parts well, the sheath and all surrounding it, and drying it well before the operation. Unlike chloride of mercury, it has no effect on the edge of the knife. I knew a veterinary surgeon who has gone over to the great majority, who castrated 17 colts in one season, and 17 died. He used a dirty wooden clam, and every colt that he touched that season died. You cannot insist too strongly on cleanliness. The wound should not heal too soon. In the country, especially in Wales, I have castrated 20 or 30 colts together, and turned them out, and they have never ailed anything. Welsh ponies are like the Scotch: they have a mouthful, but not a bellyful, and I believe that the exercise they have after the operation prevents the union of the lips of the wound too soon. I think we do wrong in keeping the animals in the stable a few days. They should go out the next day; and if the weather is bad they should be exercised, the motion preventing the healing of the wound and allowing the escape of any foreign material, such as an eschar or any discharges. I do not like the ligature. I have seen it used, and I must say, with very bad results. Professor Dick was fond of the ligature, and those who remember Mr. Dick's operations will remember that he was not a very successful operator. By using the ligature you introduce a foreign body, and if that is done, no matter how careful you are, it has a tendency to introduce septic materials, and to bring about peritonitis. The author says that peritonitis must be fatal, and that treatment is of no avail. I have had cases which have been treated a short time after the symptoms appeared, thoroughly washing out and injecting disinfectants, as well as a solution of bichloride of mercury; the symptoms have disappeared in a short time and the horses recovered entirely. I think that if the cases are taken in time you will find that peritonitis is not so very incurable as is indicated by the writer. The covered operation is, I think, a very barbarous one. It is a very difficult matter to separate the tunics. If you have the testicle in a clam you can scarcely cut it, it slips in every direction; no matter how sharp the knife is, it is difficult and painful, unless chloroform is used, to separate the tunics of the testicles. I have recommended my friends to include everything in the clam. You will find a case mentioned in the *Veterinarian* or in the VETERINARY JOURNAL by Mr. Moore, assistant to Mr. Cartledge, of Sheffield, a few years ago. It was a case of immense hernia. Mr. Cartledge wrote to me and I recommended him to perform this operation, which he did with great success. Two years ago I performed upon three horses for a friend of mine who castrates a great many colts. He had three cases of hernia. We made a day of it, and I castrated all three, simply by including the scrotum in the clam. They all did well, and never "looked over the shoulder." There were no bad results. In five or six days the whole thing sloughed off, the lips of the wound united, and there was no bad result. It is a much more humane operation than the covered operation, which is very prolonged and difficult to perform. I do not know that I have anything more to say, except that I have had some experience with lambs. The lamb is most subject to septicæmia. It is remarkable when you go into a sheep farm to see shepherds with rotten teeth cutting lambs; and it would not be a matter of surprise if half of them died from blood poisoning, but they seldom ail anything. The great thing is to have little or no hæmorrhage. If the operation is performed by torsion, or by scraping, or by ecraseur, if you have hæmorrhage in the scrotum the lamb is almost certain to die. The blood becomes putrefied, and

you have putrefactive infection. I have seen scores of lambs die in this way. Whole flocks will die where there is hæmorrhage, particularly when the operation is performed by a professional man. One cannot be too careful in removing every drop of blood. The success of the shepherds depends upon the fact that this very delightful operation of castrating by pulling with the teeth is attended with very little or no hæmorrhage. The great point is, when hæmorrhage does occur, to remove it before it has undergone putrefaction. I consider the paper is one of great value, and I can congratulate the writer upon his first appearance as Professor amongst us, and upon his having given us something useful to talk about.

A MEMBER: In castrating older lambs, say nine or ten months old, no one has spoken about the blood that you find in the scrotum, ten or twelve hours after the operation. In perhaps two out of every dozen sheep, ten or twelve hours after castration, you will find a large clot of blood, no matter how the operation is performed, whether with the actual cautery, or by the clam. The blood comes out of the artery above the place where the cord is parted. With regard to castrating pigs, it has been my plain to cut the pig as low as possible, especially if he weighs two or three cwt. After the testicles are taken away, I make with a knife a large incision downwards, so that the matter runs away. With reference to castrating horses, I may say that I have castrated with an ecraseur, and with the actual cautery, but now I castrate standing. I have done so for four years, and I should not like to go back to the old method. Provided a man is not seventy years old, and his heart is not in his shirt, it is all right.

Mr. JAS. F. SIMPSON: With a view of stimulating someone who is in the habit of castrating horses in the standing position, I rise to make a few remarks upon the operation. I am bound to confess that I am somewhat disappointed. When I heard that this was to be the subject of discussion, I hoped that the essayist would be in a position to give us a practical demonstration upon the operation of castrating horses in the standing position. I have never operated upon a horse in that position, nor do I intend to do so. At the same time, I should be extremely pleased to hear something from those gentlemen who claim to have been successful in operating in the manner I have indicated. I now rise for the purpose of pointing out to members, who heroically go to work in this way, that they run not only extremely great risk of the limbs, but the risk of injuring those about them. It is well that they should understand their position. I believe that if an accident or death were to occur to the assistant of the veterinary surgeon who was operating upon a horse in the standing position, the veterinary surgeon would be liable to be charged with manslaughter; because I maintain that he had not taken reasonable precaution to prevent the accident. Those who go to work in this heroic manner, should think a little of their assistants, if they have no respect for their own limbs. With regard to securing the colt in the ordinary way, or by casting the animal, I agree with Professor Pritchard and not with Principal Williams, that the animal, whether the knot is at the withers or the brisket, can liberate himself by pushing the collar over his head. I admit that the animal is less likely to liberate himself in the former way, but it is possible for him to do so. With regard to opening the scrotum and severing the cord with an iron, the advantages have been pointed out, but I think that there are some disadvantages; this, in particular, that provided the whole of the coverings of the testicle be included, I think we run the risk of setting up some amount of inflammation of serous membrane, which we do not do by liberating the testicle with a knife. With regard to abscesses following the operation, I think that a great many are due to the want of proper care in clearing the iron of all scales. As a rule, we do not carry our own fires with us, and we have to put up with an ordinary coal fire, and, as is well known,

scales are liable to accumulate. We do not take assistants with us, and, therefore, the iron very frequently is not cleansed as effectually as it should be. It often happens that the scale of iron is left on the end of the cord; the scrotum heals, and abscesses follow, generally attributable to the fact that the foreign body is shut up in the scrotum. With regard to the heat of the iron, I again disagree with Principal Williams. I think that a white heat is altogether wrong to apply.

Prof. WILLIAMS: I did not say a white heat.

Mr. J. F. Simpson: That was what I understood.

Prof. WILLIAMS: I said approaching a white heat.

Mr. J. F. SIMPSON: I disagree with that. If the iron is fully red, to my mind it is too hot to effectually seal the arteries. I think that every practitioner will call to mind a time when he has applied the iron at such a heat as Professor Williams has mentioned, and has failed to secure the artery, but by pouring water on it, he has by the next application succeeded effectually in securing the artery. With reference to chloroform, I believe that Professor Pritchard has always been consistent in maintaining that chloroform was unadvisable in operations of any kind if it can be avoided, because he says that the animal generally will not make the same progress where chloroform is used. I must say that is not my experience. With regard to ligaturing the artery, I remember on one occasion resorting to that method of operating, and I unfortunately lost my patient from tetanus.

Mr. MCGAVIN: With regard to the rope, the horse sometimes gets it off altogether. That is the fault of having it too long. It is easy to put a small rope round the girth and fasten it to the neck-rope. There is one method of securing the colt, of which a description is given in the VETERINARY JOURNAL by someone in America. With reference to chloroform, I think it is now more used for castration that it was formerly. As to the animals making a good or bad recovery, I think, if you read and study the papers on the use of chloroform in Edinburgh a few years ago, by Professor Williams and Mr. Roberts, you will find evidence brought forward that in all cases, whether in human or in veterinary practice, the wounds heal quite as well with chloroform as without it, and certainly it should be used on the ground of humanity, as it saves a great amount of suffering. Mr. Mayor has had great experience in the use of chloroform in castration, and perhaps he will give us the benefit of that experience. Mr. Olver, of Tamworth, has also had great experience, especially in the case of blood colts. Very many accidents occur to colts, and some animals are destroyed altogether by their efforts in kicking and plunging during castration, but he has, by the use of chloroform, avoided those accidents. As to cleanliness, I should certainly advise the use of antiseptics. It is wonderful, however, how few accidents happen in castration; I mean with shepherds and people who have had no experience with reference to antiseptic surgery. It is astonishing that so few accidents should occur, even when men perform the operation with filthy hands. With reference to the swelling of animals after castration, as Principal Williams has said, exercise is one of the best preventives, and it is also a good cure. With reference to casting a horse on the side or on the back, I think if instead of putting the animal on his back, you put him on his side, and castrate in that way, it is an advantage. That is the method adopted in our country very successfully, deaths very rarely occurring; but on rare occasions there may be a case of tetanus. I have had very little experience with the hot iron, but the idea with us is this, that you must not use the iron very hot. You first separate the cord entirely with the iron, and then stop oozing from the vessel by searing the vessel properly, and you have a dull iron for the purpose.

Mr. CAMPBELL: You are aware that I have had considerable experience of castration in my time. I may draw attention to the old method of side lines.

Professor Williams and Professor Pritchard have told us of the difficulty they have experienced. I threw out a hint on the subject fifty years ago. You are all aware that every colt has a long mane. All that is required is to put the rope close on the withers, and take a piece of hair and tie a knot. There is no fear then that the horse will cast the rope. I have not really thrown a horse with side lines for over 15 years. I have also discarded the cautery. I have used torsion for years; but for the last 10 or 12 years I have used the ecraseur with good results. I castrated horses on their feet for three years, but I nearly got my leg broken, and I never tried it again. With regard to the ecraseur, I used it last year, and owing to the bad handling of one of my assistants, the chain broke while I operated. Luckily, I had some carbolized chromic gut, and I castrated the animal simply by ligaturing the artery with it, and he made a splendid recovery. I have done four or five since with chromic gut; and I think when it comes into use, the ecraseur and the cautery will be things of the past. I believe it is the most surgical, and the best mode of operating.

Mr. HUGHES: I will only mention one point, that of casting a colt with a side line. I believe the great secret really is, not to put the animal on his back, or to include the fore legs in tying. By putting on the back and tying all the legs, you form two fixed points, viz., the back against the ground, and the legs firmly secured with the rope, which, in my opinion, causes the animal to fight against this uncomfortable position, and increases the possibility of injuring himself; whereas, in securing him on his near (left) side, and having the right (uppermost) hind leg well drawn up against the belly, the inguinal region is well exposed, and little or no struggling ensues. By starting the ropes from the withers instead of the breast, I have only known two or three instances where the collar was slipped off, and it does away with the necessity of putting on a girth to secure the collar to.

The PRESIDENT: A letter has been received from MacGillivray, of Banff, on this question, which the Secretary will read.

The SECRETARY: The question Mr. MacGillivray asks is, "How he (Professor Dewar) and his correspondents manage in such an easy and off-hand manner to return the loop of bowel, which they sometimes find in the scrotum, along with the testicle during castration? I have always found this to be a very serious matter, and I should be exceedingly glad if Professor Dewar would give his own or any of his correspondents' *modus operandi*; otherwise, I am sceptical—I mean the return of the loop of bowel to abdominal cavity; not merely to the scrotum—where anyone could sew it in."

In addition to Mr. MacGillivray's question, there is one question that I should like to put with reference to the fatality in lambs. Professor Dewar says:—"Death is evidently due to malignant œdema starting from the operation wounds." I should like to ask if this is clearly established. It is well known that malignant œdema is a specific disease, due to a specific organism; and I should like to know whether Professor Dewar has established that in these cases, or asked anyone to establish it for him; or whether the fatality he alludes to may not be due to septicæmia, as suggested by Professor Williams.

Mr. MAYOR: A variety of opinions have been expressed on different subjects referred to in the paper, but I will only claim your indulgence for a minute or two in order to say a few words on chloroform. I did not intend to speak in the discussion, but when I heard my old teacher, Professor Pritchard, as Mr. Simpson has said, consistently enunciating the same doctrines to-day in regard to chloroform that he did when I was a student, I thought I should like to say what my little experience has led me to believe in regard to chloroform. I well remember that chloroform was not used at the college. I never saw it administered there. I well remember that Professor Pritchard used to say the same as he has said to-day. I also remember that it was largely in consequence

of what he said that for a number of years after I left Camden Town I never used chloroform. But I happened to see a friend use it, and was so immensely delighted with its action that I set to work and used chloroform on the first horse I fired, and since that day, which was seven years ago, in my practice, which is only a small one (for I live in a desperately congested district—congested with veterinary surgeons I mean), I have not performed a serious operation on a horse without chloroform,—I mean any operation necessitating the throwing of the animal. I have used chloroform for castration for about four years in ordinary cases. I suppose I have operated on a few hundred cases, and only about five without chloroform. In two instances the owners have said that the animal seemed to be sleepish and sluggish for a day or so afterwards, but in the great majority of cases the employers on whose animals I have used chloroform have themselves asked me to use it the next time. They have said that the colts never seemed to suffer so much. I have myself watched them during the first year or two, and have gone out of my way to look at them to see how they were getting on, and most distinctly they did not seem, so far as my judgment went, to suffer from its effects in any way. No doubt the result was largely due to the minimising of their struggles. I was sorry to hear Professor Pritchard say that the wounds did not heal so well after the operations performed under it. I was sorry in the interest of the horse that a man holding his eminent position should take that view with regard to the use of the drug, because no doubt if he spoke as strongly in favour of chloroform his words would carry much more weight than mine, but so far as my testimony goes I give it.

Mr. HOPKIN: With regard to the use of chloroform, I may say that it is very useful when you have the case of a colt where there is danger of a broken limb or back. A practical suggestion that has not been mentioned, but perhaps it is known to the majority of those present. In using the actual cautery, the great thing is to get as near as possible to the testicle when searing. Further up the cord there is more trouble in stopping the hæmorrhage. Another old suggestion was, never let the animal get wet in his loins; let him have exercise or work directly after the operation. With regard to tetanus, it is said in the paper, "Tetanus we have never met with but after the operation by the caustic clam. We have had two cases." I do not think that that necessarily arose from the operation. It might have occurred from the surroundings, but not necessarily from the operation itself. With reference to standing versus casting, I may say that I saw a horse done by Mr. Matthews in the standing position, and I came to the conclusion that my neck was too valuable to generally adopt that method of operating. I may be permitted in a few words to describe the operation as I saw it, and as I have done it on several occasions. The animal is put in a corner and a rope is passed round his neck and secured to a ring in front of the breast; this is to prevent his rearing. The assistant holds the horse with a twitch, pressing him backwards. Old Mr. Matthews was an expert operator. He seized both the testicles between the fingers, pressing downwards and backwards. The operator stood on the near side of the colt close by the flank. When he had seized both testicles with the left hand, he passed his other hand behind the thigh, using a Symes' bistoury and plunging it boldly into the testicle. It did not occupy more than a few seconds. The two testicles hanging out of the openings, a wooden clam was then taken with a taper end similar to the one shown in the other room, and which he fastened with a leather ferrule placed on the taper end.

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Then with a blunt-pointed ordinary clasp knife the testicles were removed, thus completing the operation. It struck me that the great secret of success was that before the horse had time to plunge the point of the knife was in the

middle of the testicle. Mr. Matthews' clams were filled with a dry caustic, composed, I believe, of corrosive sublimate, gum, and charcoal, this being allowed to dry in the clam before using. It is an improvement on a greasy caustic.

Mr. MAYOR: Mr. Hopkin, perhaps, is not aware that Mr. Matthews himself once, if not twice, got his leg broken in operating. A friend of mine once brought down Mr. Matthews and learned the mode of operation from him. He was admitted to be an expert operator, but the very last animal he operated upon got on to him and ruptured him.

Mr. WILSON: Many methods have been mentioned as to the mode of casting. As the collar rope has been mentioned, I should like to show the method that I adopt. This is a simple representation of my plan: I have a large collar strap that goes round the neck, and another similar one that goes round the whole of the withers, preventing the collar rope passing over the neck, and I have a ring attached to the end of the ropes. In that way I have never had any difficulty whatever in keeping the collar ropes from going over the horse. It is a very simple mode; I have used it for thirty years and have never seen any ill effects from it.

Mr. TRIGGER: With regard to the use of chloroform, I think that in the interests of humanity the matter ought to be very seriously considered, because it is our duty to minimise pain as much as possible. Although the operation in young animals is a very trivial one, in aged animals it is very important.

Mr. MAYOR: I should like to ask Professor Dewar if he has ever seen paralysis of the penis after castration, and if so, how he treats it.

Prof. DEWAR: I wish to express my satisfaction with the discussion that has ensued upon my paper. In listening to Professor Macqueen's observations on the previous paper, my first feeling was one of profound gratitude that he did not open the discussion on my paper. As it is, I feel rather pleased to think that we have had such a profitable discussion. There are only one or two points to which I should like to direct attention. Mr. Thompson referred to the opening of the scrotum with a hot iron, and he was followed by Professor Pritchard, who gave what was to them a very sufficient reason—that of preventing the healing of the wound by the first intention. In the case of old stallions, I do not deny that the method is perhaps a better one, but in the case of yearling colts, where the glands are not large and the cords are comparatively small, we want healing by the first intention. The sooner we get the wounds healed the better. I do not object to a few drops of blood in the scrotum. If the animals are healthy the blood will soon be removed and there will be no suppuration. If the colts are turned out into the field, not one in fifty will give any trouble. They will be healed in about a week, and there will be no suppuration. By leaving the wound open, searing it with a hot iron, you may get suppuration. Professor Pritchard referred to the pain of the operation; surely it is a far milder operation to open the scrotum with a knife than with a hot iron. There is less pain with a sharp knife than with a blunt knife. If medical men operate on human subjects they soon find out the difference between a blunt knife and a sharp one. Much more is it the case when operating with a hot iron. Mr. Thompson spoke of rigs, and reference was made to operating with a needle instead of with the fingers. No harm can be done with a blunt seton needle; it can be easily cleaned. I use the fingers occasionally to feel how the operation is proceeding, but I prefer the blunt needle. Several gentlemen have taken objection to what I have said with regard to the testicles being only in the abdomen, and they have referred to the difficulty of the operation when the testicle was within the abdomen. That is where the difficulty lies. I do not think there is anything in the operation of removing the testicle when it is outside the abdominal cavity; it is when

it is inside that difficulty is experienced. Injury to the peritoneum in the abdominal cavity is a sure test of asepticism. If there is not asepticism there, there will be peritonitis. As to the name "rigs," that is a matter of opinion. It is not of much consequence if we know what we are driving at, because it comes to the same thing. Several gentlemen have objected to the way of securing colts adopted in the north. I prefer to have the colts as tightly tied as possible. The firmer the legs are down the less risk there is. I have seen several thousands of cases, and I have known of only three colts being injured —not one injured in the back—and yet they have all been tied in this way. Professor Pritchard spoke of reducing the difficulty of getting on the hobbles with the twitch upon the colt. He is right in a sense. Sometimes there is a difficulty, though, in getting on the twitch. Only last season I had a case in which it took the men at least half an hour, and two or three men were spread upon the grass before the twitch was got on. One man tried to put on the hobbles, but he gave it up and had to put on a rope. Mr. Malcolm asked a question about lambs. I cannot answer the question, because I did not examine the lambs. I would have done so if I had had time. I have no doubt there was septicæmia. Everything was black. There was no appearance of suppuration in any form, and the animals died very rapidly. With regard to the remarks made about returning half the horse's intestines into the abdominal cavity after they have passed out, I really gave the description as a friend gave it to me. I have done the same thing myself, but there is a difficulty about it. You will see the matter referred to in the paper. The thing should be attended to as soon as it is observed. I have not seen cases of paralysis of the penis—I never had such an unfortunate occurrence. As to the question of peritonitis, you will observe that I do not say in my paper that every case of peritonitis will die. I described the symptoms, and I said that if there are such symptoms the diagnosis is acute septic peritonitis. As to the ligature being left in the wound and scales from the hot iron, they will cause suppuration undoubtedly, but they do not set up peritonitis in the same way that infection does from strangles. If any gentleman has a worthless colt that he does not care about, I would advise him to dip his finger in an abscess of that kind and insert it in the operation wound when the colt is castrated. As to the covered operation and the difficulty of performing it, perhaps it is difficult in the case of aged horses, but in one-year-old colts you will find no difficulty in separating the tunics. When I have had the colt down I have found rupture present, although I did not expect it. In such cases I have operated there and then simply by putting on the clam as I have described, and, I am glad to say, with no unfavourable result. With reference to the standing operation, I may say that only yesterday week I castrated three stallions standing with the ecraseur. I castrated in the box in which they stood; they were brought in seriatim. There was a little hæmorrhage in two of the cases, from the cord after the operation, but it soon stopped, and the hæmorrhage was not at all dangerous. On Friday night I went to see how the horses were doing. One of them, four years old, was rather wild but was soon quietened; the others were all right. I thank you very much for the way in which you have received my paper.

The PRESIDENT: It is now my privilege and duty to ask you to record a vote of thanks to Professor Dewar for the very able paper which we have discussed. It is not necessary that I should take up your time by referring to the subject at any length at this late hour. I must, however, be allowed to say that I entirely endorse every word which has fallen from Professor Williams as to the value of this paper. The manner in which Professor Dewar has written it is to my mind most commendable. After I had read it, I said to myself that it gave about as clear a description of the various methods adopted for castration as I had ever read, and that it argued well for the

manner in which Professor Dewar would be able to discharge the important duties that he has undertaken in the old Edinburgh Veterinary College.

The motion wss carried with acclamation.

Prof. DEWAR: I thank you for the kind manner in which this vote of thanks has been proposed and responded to.

Prof. WALLEY: I have the privilege of proposing a vote of thanks to the officials of the Provisional Committee of this Association, and with that motion I especially desire to name the local secretary, Mr. Weir. Those who know Mr. Weir as well as I do—perhaps some of you know him better—will agree that he deserves our thanks for the work that he has accomplished in connection with this meeting.

The motion was unanimously adopted.

Mr. WEIR: On behalf of my colleagues and myself, I thank you sincerely for your vote of thanks. I am sure we feel amply repaid in seeing such a meeting this year. We hope that to-morrow you will have the privilege of seeing the beauties of the Clyde, and that you will add to your enjoyment of to-day a day of pleasant recreation, and I trust that as many of you will be present as can possibly attend, with your wives and sweethearts.

Prof. MACQUEEN: There is still one duty to be performed. I have great pleasure in proposing a vote of thanks to our worthy President, my old respected master, Professor McCall, for his conduct in the chair to-day.

Mr. J. F. SIMPSON: I should like to have the privilege of seconding the proposal made by Professor Macqueen, because I think if ever a President of this Association deserved our thanks, Professor McCall does. We know that the President of the Association is not reqnired to meet its members on many occasions, but he has more to do than ordinary members imagine. He has to answer all the letters of the Secretary and all the members who chose to worry him upon the business of the Association, and I am sure that whenever Professor McCall has been approached he has always given his courteous attention and consideration to all communications. The fact that he has taken so much trouble in organising the meeting to-day, and the pleasurable trip to which we are looking forward to-morrow, is sufficient proof of the interest he takes in this Society.

The motion was adopted with acclamation.

The PRESIDENT: In returning my thanks, which I do very sincerely, for the compliment you have paid me, I desire to say that during my term of office as President of this Association, I have received every support and assistance from the office-bearers. My duties have been various, and they have been of the most pleasing character, and I am sure that those who follow me will find that the position is not only an honourable one, but a position in which anyone may enjoy himself very much. I have had great pleasure in seeing so many members of my profession from a distance, and I am also grateful to the numerous friends in the neighbourhood who have been kind enough to assist us. If the weather is favourable to-morrow, I have no hesitation in saying that we shall all enjoy ourselves to our hearts' content.

Mr. RUTHERFORD: There is still one other vote of thanks, and it should be a hearty one, namely, to our General Secretary, Mr. Malcolm. The secretarial duties are not slight. I know something about the excitement of such an office, and I am certain that, in awarding Mr. Malcolm our best thanks, we shall only be awarding him what is his due. We could not be better served than we are. Mr. Malcolm is one whose one desire is to bind and cement the Society in the strong bonds of fellowship, and he deserves the gratitude of us all.

The PRESIDENT: I should like to second the motion; and I think I owe the Secretary some apology. I certainly thought that he was included in the vote of thanks passed to the officials. If I had not thought so, I certainly

should not be deserving the position that I hold, I trust in your estimation, if I had not brought this motion forward. I desire to endorse all that Mr. Rutherford has said. A more able and painstaking Secretary than Mr. Malcolm it would be impossible to find anywhere.

The motion was unanimously adopted.

Mr. MALCOLM: Gentlemen, I beg to thank you very heartily for the manner in which you have received this resolution. I can only say that the best thanks I could receive from any of you would be to see, by your efforts, the extension of the Society, and a greater interest taken in it by many more persons than at present; and that thereby our meetings should continue to increase, and be more successful in the future than they have been in the past. I shall be amply repaid for anything I can do if that is the result of our meetings.

Pleasure Trip.

The pleasure trip up Loch Long and down Loch Lomond, organised by Professor McCall and the Local Committee, on the 4th August, proved an unqualified success. The weather was glorious, and everybody was in raptures and singing the praises of Professor McCall and his colleagues for initiating a new departure of such a delightful character in connection with our annual meetings.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

AT the monthly Council meeting held on February 1st, Sir John Thorold reported his election as Chairman of the year. Mr. Cope (for Professor Brown) had presented the following report:—

Pleuro-Pneumonia.—The whole of the United Kingdom may now be looked upon as practically free from pleuro-pneumonia, there having been no case of the disease found among home-bred cattle for four months. The last outbreak in Great Britain was discovered in a London cowshed on October 1st, while the last in Ireland occurred during the last week of September.

Foot-and-Mouth Disease.—Since the last meeting of the Council an outbreak of this disease was discovered in a cowshed in North London on January 1st. Prompt measures were at once adopted to prevent the spread of the infection. The whole of the nine cows in the shed (six of which were infected) were slaughtered on the premises, the offal, hides, &c., destroyed, as well as the whole of the litter, fodder, and other things in the shed, and the premises then thoroughly cleansed and disinfected. No further case of the disease has been found since, and the country is again free.

Swine Fever.—In the first three weeks of the present year there were 122 fresh outbreaks of this disease in Great Britain and 674 swine attacked. In the corresponding periods of 1890, 1891, and 1892 the swine fever outbreaks were 166, 166, and 89 respectively, and the pigs attacked were 1,087, 1,237, and 682.

Anthrax.—This disease has been more prevalent recently than is usually the case at this time of the year. The outbreaks in the first three weeks of this year have numbered 26, as compared with 9 in 1890, 10 in 1891, and 16 in 1892; and the number of animals attacked this year has been 48, whereas in the three preceding years the numbers were 11 in 1890, 19 in 1891, and 21 last year.

The Committee had considered the terms of the motion of which notice had been given by Mr. Stratton, but they were of opinion that as the question raised was of such importance it ought to be decided by the full Council rather than by a recommendation of the Committee. The subject of the prevalence of abortion in cattle had again been discussed, and it had been

resolved to recommend that the Royal Veterinary College be asked to report to the Committee as to the feasibility and cost of making further experiments into the nature of this disease. Professor McFadyean had presented the Annual Report for 1892 of the Royal Veterinary College, which the Committee recommended for publication in the next number of the JOURNAL. A letter had been read from the agent to the Duke of Northumberland as to an outbreak of "louping-ill" amongst sheep, and it had been resolved that the Society should afford any assistance in its power towards an investigation of the complaint. Correspondence relating to the outbreak amongst young cattle of a disease locally known as "skanter" upon a farm near Tavistock had been laid before the Committee, together with a report upon the subject from Professor McFadyean, who had made a personal investigation on the spot. Sir Jacob Wilson had drawn the attention of the Committee to a case in Northumberland of the poisoning of some young beasts by their having been fed upon rotted yellow turnips, which had become putrid from the effects of the late frost.

Mr. STRATTON moved the following resolution :—

"That in the interest of the producers and consumers of meat in the United Kingdom, it is essential, as a safeguard against the introduction of foreign contagious diseases with animals, that all cattle, sheep, and swine imported into the United Kingdom from foreign countries, which are not for the time being "prohibited countries," be slaughtered at the port of debarkation, except in special cases, when they may be admitted under such conditions as the Board of Agriculture may from time to time consider necessary."

He remarked that for the first time during the last half-century this country might be said to be free from contagious diseases. That, he thought, was an argument in favour of such a resolution as he had placed upon the agenda paper. It would serve as an endorsement of the spirited action which had been taken by the last Minister of Agriculture, to whom he thought immense credit was due, and also of the way in which his successor had carried out that policy. There was one kind of protection to which he thought the farmers of this country was entitled—that was protection from foreign diseases; and, so far as experience went, it was quite clear that they could have no immunity from disease so long as foreign animals were allowed to be imported and distributed all over the country. The insidiousness of these infectious diseases of cattle, and their long period of incubation, were such that they could not possibly be detected for many months after they had been contracted. He thought the resolution, therefore, was one which should be passed. It would be an encouragement for the Minister of Agriculture to proceed on the lines on which he had hitherto gone, and might be the means of keeping this country permanently free from these foreign diseases, from which they, as consumers and producers, had suffered so much. He was not going to occupy their time with figures as to the millions or hundreds of millions which Mr. Duckham estimated this country had lost from disease, but it was undoubtedly a very large amount. Several of the best markets of the world—such, for instance, as Australia—had been closed against them for pedigree stock, in consequence of the disease which had been rife in this country. The prevalence of these diseases had very seriously interfered with the trade in pedigree stock with foreign countries. He begged to move this resolution, and that a copy of it be sent to the Board of Agriculture.

Mr. MARTIN seconded the resolution, which was then put and carried unanimously.

Jurisprudence.

In the Westminster Police Court, 26th January, 1893, before Mr. de Rutzen, C. Kemp, of Blackhorse Yard, Westminster, was summoned at the instance of the Royal College of Veterinary Surgeons, for an infringement of the 17th section of the Veterinary Surgeons' Act, 1881. Mr. Colam, barrister, instructed by the College solicitor, prosecuted, and Mr. Dutton defended.

Mr. Colam said that the offence was the displaying the words "Veterinary Shoeing Forge" on the defendant's premises at Blackhorse Yard, and he referred the Magistrate to the case on the point recently decided by the Queen's Bench Division.

Mr. Dutton admitted that his client was not on the Register, and that he had received cautionary notice from the College, and had given an undertaking to discontinue the offence in reference to some other premises.

Mr. Davis deposed that he was a clerk to Mr. Thatcher, the College solicitor, and attended at the defendant's premises on the 2nd January last, and that he there saw a double board with the following inscription :—

"R. PATERSON, M.R.C.V.S.,
"Veterinary Surgeon in attendance.
"C. KEMP,
"Veterinary Shoeing Forge."

The word "Veterinary" in front of the words "Shoeing Forge" was ruled through with an extremely thin line, which looked like a crack in the board and not as if intended as an obliteration. He attended again on the 19th instant, the day of issue of the summons, and found that the word was entirely painted out.

Mr. Dutton contended that the word had been struck out in April last, and that, therefore, there was no offence, and he was about to argue that the word "veterinary" in this connection was not an offence. Mr. de Rutzen observed he was conclusively stopped in that by the decided case on the point.

Mr. Dutton then argued that the case was one which might be met by a simple payment of costs, without conviction.

Mr. de Rutzen said he was of the same opinion, especially as the defendant had now fully complied with the requirements of the College, and he suggested to the counsel for the prosecution that the summons should be withdrawn on payment of costs.

This course was carried out, and the costs were fixed at two guineas.

A BLACKSMITH USING THE TITLE OF VETERINARY SURGEON.

AT the Birmingham Police Court, on Jan. 19th, James Owen, 223, Green Lane, Small Heath, appeared in answer to an information laid on behalf of the Royal College of Veterinary Surgeons, charging him that he, not being on the register of veterinary surgeons, and not holding at the time of the passing of the Veterinary Surgeons' Act, 1881, the veterinary certificate of the Highland and Agricultural Society of Scotland, did on the 13th December unlawfully use and take the title of veterinary surgeon and also a description stating that he was specially qualified to practise a branch of veterinary surgery contrary to the section 17 of the aforesaid Act. Mr. Parfitt, who prosecuted, said he was instructed by Messrs. Colmore and Monckton, who were acting on behalf of the Royal College of Veterinary Surgeons. The defendant, before these proceedings were taken, had been twice warned that he must not have the term "shoeing and veterinary forge" and "veterinary surgeon" placed

upon his door, as at present. In spite of these warnings, he continued the practice without taking the necessary steps to get his name on the register, and, under sections 9 and 17, was liable to a penalty of £20. The defendant carried on business as a blacksmith. Proof having been given that the defendant's name was not on the register, and that the descriptions in question were painted on the doorposts outside his forge, Mr. Mutlow, in defence, urged that there were extenuating circumstances in the conduct of his client. He had for 30 years acted as a veterinary surgeon, and had proved himself a most capable surgeon. On receipt of the letters of warning he endeavoured to paint out the descriptions complained of, but the paint had not been effective, so that the wording could be seen through. One of the defendant's workmen stated that, on Mr. Owen's instructions, he painted out the letters in October with one coat of paint, which had since been washed off.—Mr. Cooke: Can anyone read the letters now? Witness: Well, if they look carefully; not without.—The Magistrate said the case was a very proper one to be brought forward. Defendant would be fined 40s. and costs.

At the Bromley Petty Sessions, on Monday, 30th January, 1893, before S. P. Lowe, Esq. (in the chair), Colonel Colville, Captain Vansittart, Captain Hart-Dyke, James Batten, R. D. Barnes, T. Hamilton Fox, R. Stevens, and F. D. Haigh, Esquires,

E. Ford, of Foots Cray, was summoned at the instance of the Royal College of Veterinary Surgeons for an infringement of section 17 of the Veterinary Surgeons Act, 1881.

Mr. Thatcher, the College solicitor, conducted the prosecution, and stated that the defendant was a shoeing smith carrying on business at Foot's Cray, where he displayed a sign-board with the following inscription: "E. Ford, R.S.S. All diseases of the feet attended to." He briefly explained the 17th section of the Act, and that defendant was an unqualified person within the meaning of it, and he contended that the words, "All diseases of the feet attended to," was a description within the meaning of the section, implying that the defendant was specially qualified to practice a branch of veterinary surgery, and he cited the judgment in the case of the College against Robinson, and contended that if the mere display of the word "veterinary" in connection with a "forge" was a description implying veterinary skill, the present case was much stronger, and that a conviction must follow.

Evidence was then given of the offence, and that defendant was not on the register, and that the prosecution was by authority of the Council.

Defendant stated that he was not aware that he was doing anything wrong; that he had been accustomed to treat diseases of the feet of horses for many years, and thoroughly understood it all.

The Magistrates then retired to consider their decision, and on their return into court the Chairman said there was nothing to prevent the defendant treating diseases of the feet, but he must not hold out that he was qualified to do so, nor could he recover his fees, and that he would run considerable risk if he treated a case and failed to make a cure. The Bench considered the words complained of came within the meaning of the section, but they thought defendant had acted in ignorance, and were not disposed to inflict a heavy penalty; but if the words were not removed at once, and he came there again, he must expect to be severely dealt with. They fined him 10s. and 11s. costs.

Notes and News.

EDINBURGH UNIVERSITY COURT.—At a meeting of this Court held in January, Professor W. Owen Williams, F.R.C.V.S., was appointed an additional examiner in Veterinary Hygiene for one year.

RABIES IN PARIS.—Le Conseil d'Hygiène of the Seine Department has passed a resolution that the present law, under which all dogs have to be muzzled, should be maintained.

CATTLE PLAGUE IN RUSSIA.—Rinderpest is raging in eight governments, 29 districts, and 125 villages. A congress of representatives of the administrative authorities of South Russia and of veterinarians will take place at Norvotscherkask to discuss measures for the speedy eradication of the disease.

INFLUENZA IN RUSSIA.—According to the *Medicinische Wochenschrift*, of St. Petersburg, *la grippe* is much more severe in St. Petersburg than in this country. Last year the influenza raged with such severity among the Kalmuck Tartars, that whole villages were exterminated. These semi-civilized people dread the scourge as much as they do small-pox; and when a person is stricken down with it, he is usually abandoned to his fate.

THE SUPPRESSION OF CATTLE DISEASES IN GERMANY.—The *Reichsanzeiger* publishes the draft of a Bill laid before the Federal Council for the better suppression and supervision of cattle diseases, including the foot-and-mouth disease, by the assimilation of preventive measures throughout the Empire. The preamble states that the necessity of an amendment of the laws on the subject has been impressed on the Government by the great losses which the cattle disease has caused in all parts of the Empire since 1887, when it acquired a firm footing in the country, which it has maintained ever since. The most important provision is one for the appointment of official veterinary inspectors charged with the supervision of all cattle and horse fairs.

A NEW MODE OF STAINING SPORES.—Möller recommends the following method for staining spores, which is excellent in its results:—The preparation on the cover-glass is passed three times through the blaze, or placed two minutes in absolute alcohol, then two minutes in chloroform, and washed in water. It is then plunged from one half to two minutes in chromic acid of 5 per cent., washed again thoroughly, covering the glass with a drop of solution of phenicfuchsin, and is then carried to ebullition in the flame during sixty seconds. Once the fuchsin is evaporated, the cover-glass is decolorized in a sulphuric acid solution of 5 per cent. and again washed in water. It is at last left for thirty seconds in an aqueous solution of methyl-blue or of malachite green, and washed. The spores then appear a dark red, while the body of the bacteria is coloured a beautiful green.

CONTAGIOUS DISEASES AND PROTECTIVE INOCULATION IN AUSTRALASIA.—At the Australasian Stock Conference, which has recently been held, the following were some of the resolutions adopted:—"That this conference considers that M. Pasteur's vaccine of anthrax is effective, and recommends that assistance be given him in establishing agencies in all the colonies, with a view to those owners who require the vaccine obtaining and using it. That the travelling, selling, or offering for sale, or slaughtering for food, of any

animals affected by the diseases known as tuberculosis and actinomycosis, or the using of cows affected by tuberculosis and actinomycosis for dairy purposes, be punishable by law; and that there be a more thorough inspection of dairy cattle in use in populous districts. That the conference expresses its belief in the efficacy of inoculation as preventive of pleuro-pneumonia. That the conference affirms the principle of compulsory inoculation for pleuro-pneumonia where the disease appears."

ABATTOIRS AND ANIMAL DISEASES IN GERMANY.—The directors of the Town Central Cattle Market of Berlin have reported the following to the magistrate: There were slaughtered, during the month of December, 1892, 12,217 head of horned cattle, against 11,489 head in the corresponding month of 1891; 8,064 calves, against 8,268; 23,183 sheep, against 19,491; and 44,873 pigs, against 48,057; or a total of 88,337 animals, against 87,305 head in December, 1891, showing an increase of 1,032 head, or 728 horned cattle and 3,692 sheep, and a decrease of 204 calves and 3,184 pigs. Of these 122 head of horned cattle were tuberculous; 12 calves, 2 sheep, and 360 pigs. Twenty-four pigs were affected with trichinosis. There were slaughtered at the public slaughter-house of Kiel during the month of November, 1892: 86 oxen, 85 heavy bulls, 174 cows, 219 fat heifers, 98 light bulls, 95 strong bulls under two years, 429 fat calves, 1,586 pigs, 290 sheep, 558 lambs, two goats, 984 calves, 83 horses, or together 4,689 animals. Of these 1 bull, 6 cows, 2 heifers, and one strong bull were tuberculous; of organs and portions of animals affected there were 158 lungs and 10 livers (cattle), 36 lungs, 19 livers, and 6 hearts (pigs). There were slaughtered at the public slaughter-house of the same town, during the month of December, 1892: 66 oxen, 88 heavy bulls, 207 cows, 151 fat heifers, 93 light bulls, 71 strong bulls under two years, 559 fat calves, 1,707 pigs, 270 sheep, 352 lambs, two goats, 696 calves, and 66 horses; making a total of 4,328 animals. Of this number 8 cows, 4 pigs, and 1 calf were tuberculous.

Correspondence.

VETERINARY APPOINTMENTS IN INDIA.

DEAR SIR,—In the December issue of the JOURNAL, I read in the proceedings of the National Veterinary Association the following statement made by Professor Walley: "I should like to refer to one gentleman. I should be glad if he were here to explain the matter himself with reference to the closing of openings. I mean Mr. Hallen, the Chief of the Veterinary Department of India. Some years ago, as some of you know, there were a number of stud appointments in India and if I am correctly informed—there are some here who can put me right if I am wrong—Mr. Hallen was largely the means of closing the appointments. But what has he done recently? So far as I know, Mr. Hallen is responsible for the opening up of a much wider department—that is the Civil Veterinary Department of India—which in course of time must provide openings for veterinary graduates." Further on, at page 451, Professor Macqueen remarks: "Professor Walley has spoken of Mr. Hallen and the appointments he has been instrumental in obtaining for members of the profession. I should like to say that Mr. Hallen has been largely engaged in filling openings and not in making them, and that is a very considerable difference."

With reference to the foregoing, may I be allowed to give the following facts? Colonel Hallen served on the Stud Commission, the result of which was the abolition of the studs. How far he was personally instrumental in

bringing this result about is a question too lengthy to discuss in this letter. In the place of the Stud Department two others were established—the Remount and Horse-Breeding. In the former, two veterinary officers are permanently and two temporarily employed, *i.e.*, for five or six months in the year. The latter department is wholly officered by veterinary surgeons and employs four. All these appointments of course carry extra pay.

Colonel Hallen started a Military Veterinary School at Poonah, in the Bombay Presidency, which exists to this day and carries with it extra pay for a veterinary officer. He was also instrumental in establishing the Veterinary Colleges at Lahore in the Punjab and in the City of Bombay itself, each of these employing veterinary officers on extra pay. In 1888, he started a veterinary class for the instruction of officers at Simla, and which has now become a permanent institution, the class being held at Simla in the hot weather for officers and at Amballa for non-commissioned officers and men in the winter. This also carries pay.

The Civil Veterinary Department now in course of formation, owes its origin wholly and solely to his untiring efforts in the teeth of opposition and steady blocking in many and various quarters. If established on the lines that Colonel Hallen has laid down, it will not only prove a boon to India and the long-suffering agriculturists and cattle, but will open out a wide and remunerative field to members of our profession who are not afraid of hard work, much travelling and great responsibility.

G. M. RAYMENT, Veterinary-Captain A.V.D.

Babugarh, India.

THE MALADIE-DU-COIT.

DEAR SIR,—I wish to correct an error printed in my paper on the Maladie-du-Coit. On page 425, in the December number of the VETERINARY JOURNAL, instead of *Veterinarian* place the Report of the Live Stock Commissioners of the State of Illinois, issued in October, 1887.

Since writing the article, I bled the stallion we have under observation, and found exactly the same germ in the blood that was found in the roan mare. The germ was originally discovered by Dr. Billings, in 1887, in the tissues of a mare that was killed at the Chicago Veterinary College. We have cultivated the germ in glycerin bouillon, and also in the blood of the animals, which was collected in sterilised vessels. A small mare was inoculated subcutaneously with 12 c.c. of this glycerin bouillon cultivation, but no result followed. The same mare had a similar quantity of the stallion's blood injected into her right jugular vein, but that also failed to produce any effect. The same germ can be easily seen in the spinal cord and other tissues of the roan mare, the autopsy of which is described in my article.

Quoting from an article in a new book which Dr. Billings is writing, he says: "This disease is only transmitted by the sexual act and with certain sexual products. The reason of our failure to transmit the disease does not appear to be in the fact of an error as to the specific nature of the bacillus, but rather that we remove the bacillus too suddenly to other media, and that to gain access to the body the fluids of the sexual organs in their natural state must be present for it to live in until it can accustom itself to living in the blood."

J. WILSON BARKER, M.R.C.V.S.

Patho-Biological Laboratory, State University,
Lincoln, Nebraska, *January 26th.*

VETERINARY EDUCATION IN THE UNITED STATES OF AMERICA.

SIR,—Will you please insert the enclosed resolutions in the VETERINARY JOURNAL, for the Massachusetts Veterinary Association, in order that the profession in England may know that this Association is opposed to insufficient Veterinary education in the United States ?

AUSTIN PETERS, Sec.

Boston, *Feb. 8th.*

MASSACHUSETTS VETERINARY ASSOCIATION.

At a meeting of the Massachusetts Veterinary Association held at Boston, on the evening of November 23rd, 1892, the following resolutions were presented by a committee duly appointed at the previous meeting, October 26th, and adopted by vote of the members present.

(Signed) L. H. HOWARD, D.V.S.,
President.

(Signed)
AUSTIN PETERS, M.R.C.V.S.,
Secretary.

Whereas,—The members of the Massachusetts Veterinary Association regret that the Faculty of the recently established Veterinary School in Washington, while professing to have "arranged its curriculum to suit the requirements of modern veterinary education," should have adopted a short two years' course of study, thereby lowering the standard of veterinary education in this country, and ignoring entirely the unanimous opinion of the profession, as expressed at the last annual meeting of the United States Veterinary Medical Association (Boston, September, 1892), and

Whereas,—While we recognize the value of the laboratories of the Bureau of Animal Industry in the furtherance of veterinary education, especially if connected with a long term or post-graduate school, it is the opinion of this Association that the establishment of the school, as at present constituted, is detrimental to the advancement of the veterinary profession, and a hindrance to the proper use of the laboratories of the Bureau for good work.

Be it therefore *Resolved*: That this Association censures the action of the Veterinarians connected with this school who are in the employ of the United States.

That it is of the opinion that neither the best interests of the public nor the profession will be advanced by any such use of the staff or laboratories of the Bureau,

And that a copy of the above resolutions be forwarded to the Honourable the Secretary of Agriculture and others interested in the proper administration of the affairs of the Bureau of Animal Industry.

(Signed)

Committee on Resolutions { WILIAMSON BRYDEN, V.S.
J. F. WINCHESTER, D.V.S.
JOHN M. PARKER, D.V.S.

THE NATIONAL VETERINARY BENEVOLENT AND DEFENCE SOCIETY.

SIR,—I have pleasure in reverting to the above societies, partly to remind the members of my profession that there exists such societies in our midst, and also to lay before them the importance and value of the same. We have now over £3,346 in hand.

In the VETERINARY JOURNAL for this month (February) will be found the Annual Report, to which we earnestly call the attention of every member of our profession, for it is evident to everyone that none of us are safe nowadays from actions at law; neither are we safe from fatal accident or sudden death. If we have a wife and family dependent upon us, and they are unprovided for, the duty to become enrolled members is tenfold greater.

The purport of the present short paper is to show that these societies have required the care all young growths need, if we would have them attain healthy maturity. We, the officers, have endeavoured to do unto others as we would have them do unto us. It has always been a matter of surprise to us that a greater number of members of our profession have not seen it to be their bounden duty to join our ranks. It would seem that many of them have no sympathy with their neighbours, nor even any care for their own future: their conduct is inimical to their own interest. I am at time tempted to despair of my profession, unless a greater number of the members have instinct, which give force to humane and exemplary sentiments. Such sentiments always grow up and acquire strength in the person possessing them. This is a condition of the law of human nature, and supplies an argument for everyone who desires the happiness of mankind, or who fully realises his responsibilities to himself, his wife, and his family.

Our societies have from the first steadily progressed, and are now firmly established in a very satisfactory position. Last year we had 14 new members, and this year, since 1st January, we have 9 more—one a life member of £10, Mr. A. J. McCallum, of Edinburgh; and we invite every good man and true to join our ranks. The subscriptions have been coming in since January 1st more freely and satisfactorily than ever before. The kindly feeling expressed with each payment is really most exhilarating and encouraging.

THOMAS GREAVES.

Manchester, *February 14th.*

CREMATION.

DEAR SIR,—Sir Spencer Wells writes in the current number of the *Forum*, on the problem, how to prevent the coming of cholera, the solution to which he sums up briefly in the words: "The lessons which the cholera of 1892 should teach everyone, are that a supply of pure drinking water must be obtained. When this is impossible, impure water must be boiled, and when any one dies, the body must be cremated, not buried in the earth." Sir Spencer holds that it is hopeless to think of abolishing cholera if its bacilli are preserved by *interring* its victims. How many cases of anthrax can be traced to burying the carcases? If all animals which died from *contagious* diseases were *cremated, it would be better for the community.*

R. J. DAWSON, M.R.C.V.S.

Reigate, *February* 14th.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from E. Wallis Hoare, Cork; G. L. Priest, Manchester; G. Thatcher, London; G. M. Rayment, Babugarh, India; H. G. Pyle, Cleveland, Ohio; A. W. Hill, London; J. W. Barker, Lincoln, Nebraska, U.S.A.; T. Greaves, Manchester; R. J. Dawson, Reigate; Messrs. Arnold and Sons, London; Professor Boschetti, Turin; H. Gray, London; General

Sir F. Fitzwygram, Bart., London; Professor E. T. de Jong, Edinburgh; Dr. Billings, Lincoln, Nebraska, U.S.A.; Dr. T. J. Turner, Missouri, U.S.A.; A. Peters, Boston, U.S.A.

BOOKS AND PAMPHLETS: *Wynne E. Baxter and V. Heurck*, The Microscope, its Construction and Management; *H. McLean Wilson*, Cottage Sanitation; Bulletin des Seances de la Societe Nationale d'Agriculture de France; Johns Hopkin's Hospital Bulletin; *Veterinary-Captain F. Smith*, A Manual of Veterinary Hygiene; *P. J. Cadiot*, De l'Ovariotomy; De la Castration du Cheval Cryptorchide. E. Aureggio, Remontas des Cavalries Francaise et Etrangeres; Encyklopädie der Gesammten Thierheilkunde und Thierzucht; Johns Hopkins Hospital Reports; *Dr. F. Boschetti*, La Malleina et Siero di Sangue Morvoso nella Diagnosi Moccio; Il Siero di Sangue nella Diagnosi della Morva.

JOURNALS, ETC.: *Repertorium der Tierheilkunde; Annales de Méd. Vétérinaire; Revue Veterinaire; American Veterinary Review; Mark Lane Express; Bacteriological World; Cape of Good Hope Agricultural Journal; Recueil de Med. Veterinaire; Field; Journal de Méd. Vétérinaire; Clinica Veterinaria; Presse Veterinaire; Live Stock Journal; Thierarzt; Lancet; Echo Vétérinaire; British Medical Journal; Moderno Zooiatro; Edinburgh Medical Journal; Archiv für Wissenschaftliche und Praktische Thierheilkunde; ; Journal of the Royal Agricultural Society of England; Journal of the Royal United Service Institution; Journal of the Society of Arts.*

NEWSPAPERS: *Cork Constitution; Edinburgh Evening Dispatch; Yorkshire Post; Nebraska Western Resources; Scottish Farmer; Manchester Courier.*